RAILROAD GAZETTE

FRIDAY, JULY 22.

Locomotive Boiler Construction.

The following reports were presented to the Master Mechanics' Association at its recent Convention in Providence:

RIVETING—REPORT OF MR. WELLS.

To the American Railway Master Mechanics' Association:

Your Committee on Boiler Construction and Improvement, appointed at your last annual Convention, after an interchange of opinion on the subject, concluded that each member of the Committee should make an independent report to the Convention on some branch of the subject assigned us for investigation, if circumstances should permit it, and that we would not undertake to make up a report embracing in one all that might be offered on the subject, but leave each member of the Committee free to select his own subject for investigation; collect his facts and make his report to the Convention. So far as the Chairman of your Committee was concerned, no other course was practicable. The demands of business were such that time could not be spared to collect the data for a full report, and no other member of the Committee seemed willing to assume the task, not having the time at command necessary to do the work.

A branch of the subject of boiler construction worthy of some further investigation, it seems to me, is that of "set riveting," commonly called button-set riveting in distinguishing it from hand riveting, as generally practiced in riveting boilers.

The idea usually conveyed by the term button-set riveting is the plan of forming the head of the rivet to the shape of a half globe, by placing on the end of the heated rivet a set with a rounded cavity and driving it down with a sledge, at the same time slightly moving the set from side to side to round down the lower edge of the head to properly finish it. This plan has generally been regarded with disfavor and has heretofore been but little used in riveting the seams of boilers where tight work was required.

A plan similar to this has been practiced for several years by the Louisville & Nashville, and perhaps other roads, in the construction of locomotive boilers, which at least, so far as the Louisville & Nashville road is concerned, has been so eminently satisfactory in all respects that a detailed description of the plan, and the tools used, will perhaps be considered worthy of your consideration.

The object to be accomplished in riveting is to cause the rivet to perfectly fill the hole and at the same time draw the plates perfectly tight together. The steam riveting machine undoubtedly best fulfills these conditions in its work; but all riveting cannot be done by steam riveters. The steam-riveting machines are expensive in their first cost, and it is only where a large amount of work is to be done that the advantages derived will justify the outlay in capital. Smaller, and what may be called portable steam-riveting machines have lately been brought to the notice of the public; but it is questionable whether, for locomotive boiler work, they will prove a success. As before stated, it is only in cases where a large amount of riveting is done that the advantages of the steam riveters will warrant their cost, and a very large proportion of boiler riveting must therefore be done by hand, or some plan requiring a comparatively small outlay for tools.

The plan of set riveting consists of nothing more nor less than placing a set on the end of the rivet, having a conical-shaped cavity, of the shape and size of the finished rivet-head, holding it square, and driving this down on to the rivet, forcing the rivet against the holder and swelling it until the hole is perfectly filled, the head formed, and the plates drawn tightly together.

The manner of driving rivets by this plan is illustrated in fig. 1, which shows the position of the set as held on the end of the rivet while being driven down by the sledge to form the head. The weight of the set is from 2½ to 3 lbs., and of the holder about 60 pounds, and of the sledges 9 or 10 lbs. each.

The size of the conical cavity in the set for forming the head on a ¾-in. rivet is 1 7/16 in. diameter at the base and ⅜ in. deep, which forms a head as represented in fig. 2.

The length of the rivet should be so proportioned that when driven, the lower edge of the set will about touch the sheet so as to leave no surplus iron at the base of the head; at the same time the body of the rivet filling the hole, and the head being perfectly formed and full size.

In driving rivets by this plan no skilled labor is required other than knowing how to place the holder tightly on the rivet when put in the hole, and holding the set squarely on

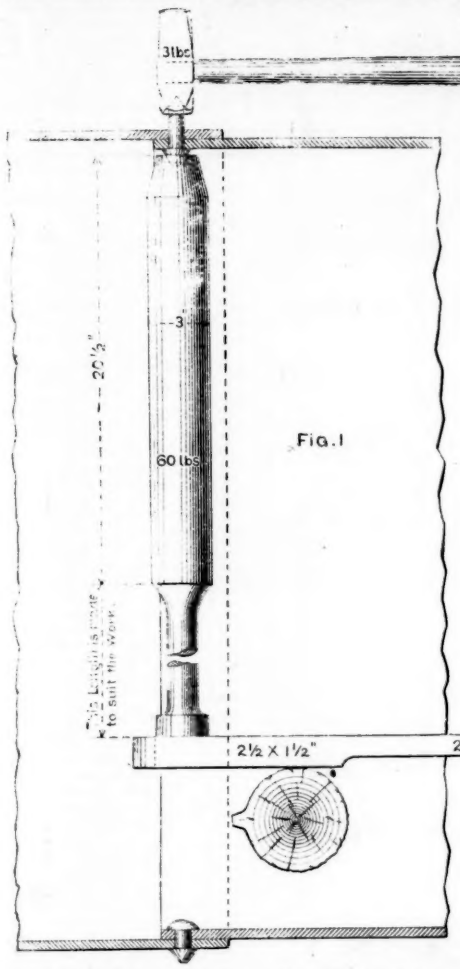


Fig. 1

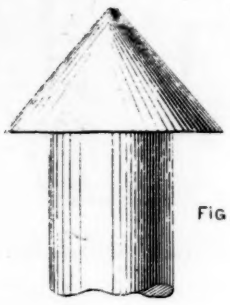


Fig. 2.

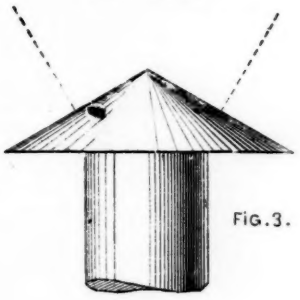


Fig. 3.

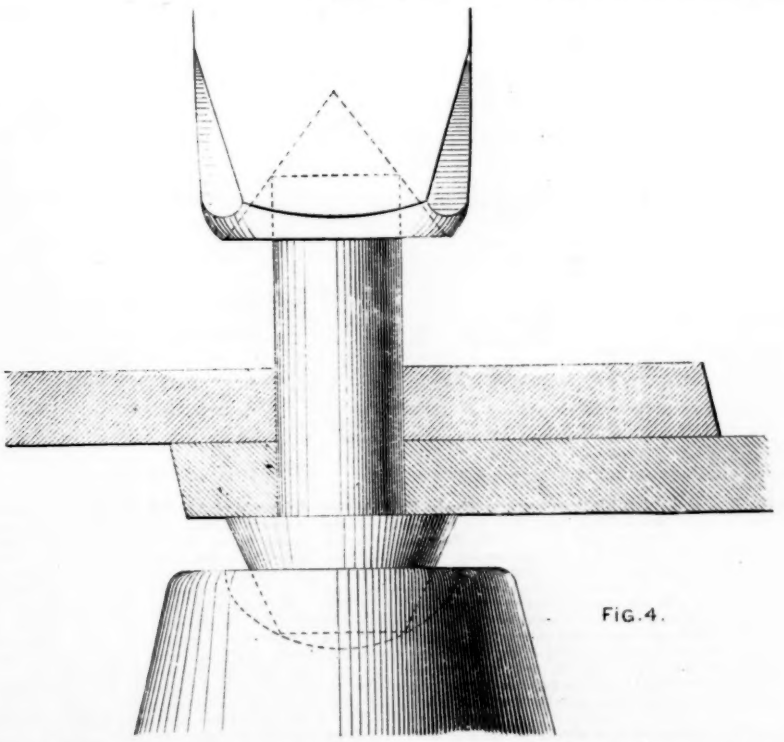


Fig. 4.

the end of the rivet, and sledging it down to form the head; the operation requiring two men to sledge, one to hold the set, one to manage the holder, and a boy to heat the rivets. The rivet is not struck direct by the sledges at any time during the operation of driving, but the head is formed entirely by driving the set down squarely on the end of it. To drive a rivet requires about 24 blows with the 9 or 10-lb. sledges at the rate of about 80 blows per minute; a flatter with a face about 1½ in. square is then placed on the lap alongside the rivet and given five or six blows to close the sheets together; the set is then placed on the rivet-head again, and given five or six more blows and the rivet is finished; the whole operation of driving requiring about 35 seconds of time to the rivet.

In practice we find that a riveting gang will drive in the seams of the shell of a boiler, an average of 30 rivets per hour, or 300 per day, and in the seams of the fire-box, in throat and back sheets, dome, mud-ring, braces, etc., an average of about 22 rivets per hour. This includes the time necessary for taking out bolts, drifting holes, adjusting the tools and the work.

In hand riveting we find that two riveters will drive, on an average, taking the whole boiler, only about 125 rivets per day, or 12½ per hour.

At these rates of driving rivets by the two different methods, the difference in the cost of driving the rivets in one of the standard boilers of the Louisville & Nashville Railroad Company for an 18 by 24-in. cylinder engine, and the time required to do the work, would be as follows: the boiler being double seamed in all transverse seams, and "welt seams" in all longitudinal seams; the number of rivets in the boiler being as follows:

Rivets in fire-box seams	284
" " mud-ring—long rivets	94
" " smoke-box—long rivets	32
" " dome ring " "	38
" " " flange	80
" " " vertical seam	12
" " front flue-sheet	62
" " back seam of smoke-box	32
" " connection, rib braces	40
" " vertical braces in dome	18
" " angle iron bracing	30
" " " " back head	28
" " " " " front "	31
" " long braces to barrel	36
	780
Rivets in shell, first transverse seam	128
" " second " "	128
" " third " "	152
" " throat sheet, corners	64
" " longitudinal seam, first	40
" " " " second	40
" " " " third, two	80
Rivets in shell longitudinal wagon top, two	112
" " back head	168
Total in shell	912
" fire-box, braces, etc.	780
	1,692
Rivets in fire-door flanges	30
Total rivets in the boiler	1,722

To drive these rivets, leaving out the 30 rivets in fire-door flanges, which require special care and arrangements for driving, the cost, by the set-riveting plan, and the time required, would be as follows:

Four men at 15 cents per hour	60 cents.
One boy at 8 cents per hour	8 cents.
Cost per hour for labor	68 cents.

The 780 rivets in the fire-box, mud-rings, dome, smoke-box, angle iron, etc., would be driven at the rate of 22 rivets per hour, requiring 35.45 hours' time, and cost $24.10, or at the rate of 3.09 cents per rivet. The 912 rivets in the shell of the boiler would be driven at the rate of 30 rivets per hour, and require 30.4 hours' time, and cost $20.67; or an average of 2.26 cents per rivet, making the total cost for the boiler $44.77, and time required to do the work 65.85 hours; the average cost per rivet would be 2.64 cents.

To drive the 1,692 rivets by hand, at an average rate of 125 rivets per day, or 12½ per hour, would require 135.36 hours' time for a gang of riveters to do the work, costing as follows:

Two riveters at 25 cents per hour	50 cents.
One helper to hold rivets	15 cents.
One boy to heat rivets	8 cents.
Cost per hour for labor	73 cents.

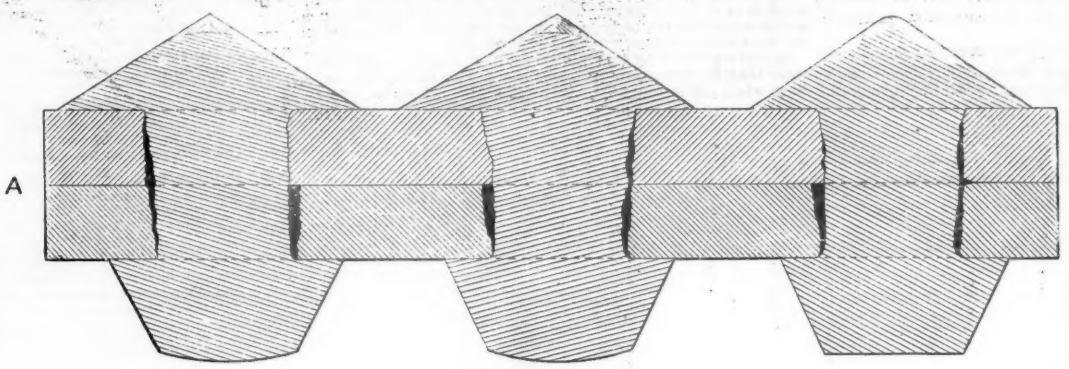
This would make the cost of driving the rivets for the whole boiler amount to $98.81, or an average of 5.84 cents per rivet, and require a little more than 13½ days' time to do the work, as against $44.77, and a fraction more than 6½ days' time to perform the labor, by the set riveting plan. A difference in favor of the latter of 54 per cent. in cost and 51 per cent. in time.

In the case of hand riveting, where but little time is lost in moving the work and adjusting tools, taking out bolts, etc., as many as 16 or 18 rivets can be driven per hour; but taking the whole boiler, and the occasional delays in moving the work, the average will be about as stated above.

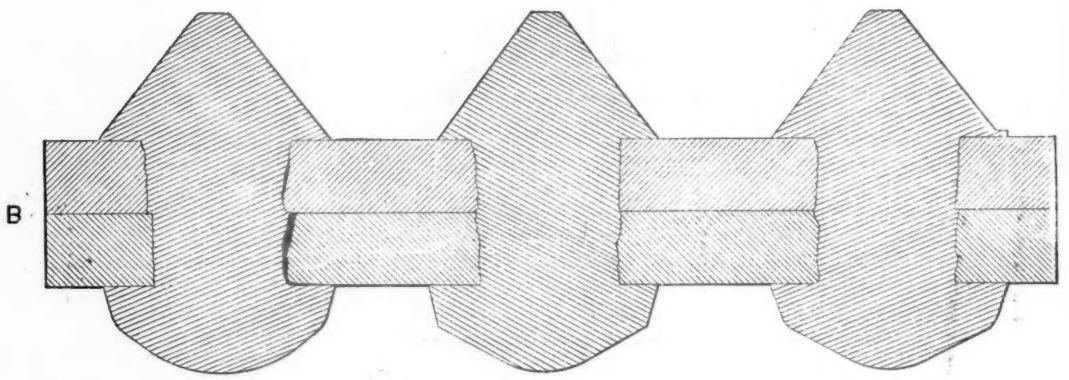
In like manner, in set riveting, more than 30 rivets can be driven per hour without difficulty, when no unusual time is lost in adjusting tools and the work, but the average will be about as I have given it.

In set riveting, the comparatively deep conical cavity in the set, prevents the end of the rivet from swelling out, or spreading, as it otherwise would if driven with the face of a hammer, and in consequence it is driven well down into the hole until it is perfectly filled, or as nearly so as it is possible to cause a rivet to do that is hotter when driven than the metal in the plates. Driving with set and sledges the rivet need not be quite so hot as in the case of hand driving, and consequently it will fill the hole more perfectly when cold;

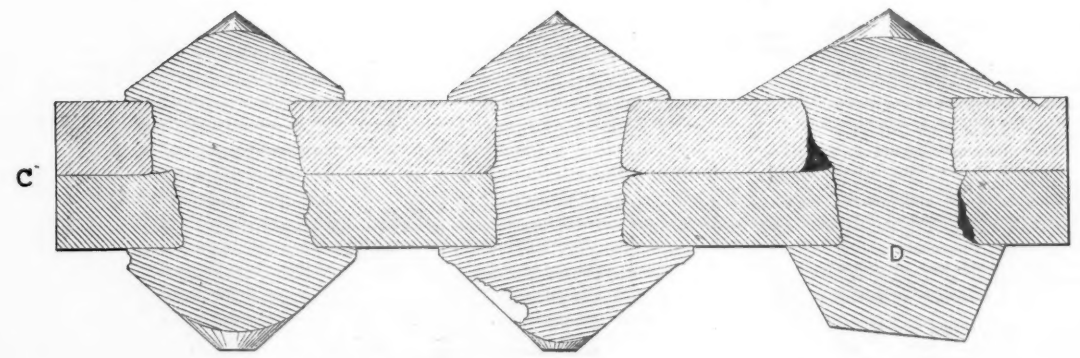
also in driving the rivet, the force of the blows given is in exactly the proper direction to accomplish the object of forcing the rivet down and swelling it, until the hole is perfectly filled, and plates closed together; while in the case of hand riveting, after striking the rivet a few blows squarely on the end with the riveting hammers, the direction or force of the blow is changed to an angle from the central line of the rivet, and instead of being in the direction to drive the metal solidly into the hole, it is slightly in the direction to drive the rivet from one side to the other in the hole as indicated by the dotted lines in fig. 3. This is more particularly the case when the rivet heads are sharply pointed. In driving rivets by hand, the weight of the hammers is only about



HAND RIVETING. LOUISVILLE AND NASHVILLE RAILROAD SHOPS.



"SETT" RIVETING LOUISVILLE AND NASHVILLE RAILROAD SHOPS.



STEAM RIVETING. HAND RIVETING.

or 3½ lbs., and it is with their comparatively light blows that the metal of the rivet is expected to be forced down into the hole so as to perfectly fill it. Whether this expectation is realized in a majority of cases or not, may easily be determined by planing a seam through the centre of the rivets. On the other hand, in driving rivets by the set riveting plan, sledges are used weighing from 9 to 10 lbs., and the blows are given as hard as men can strike, by swinging the sledge over head, and are given squarely on the end of the rivet, the set preventing the projecting end from spreading until the rivet has filled the hole and can be forced no further in that direction; then the head is formed, as in a mold, in the conical cavity of the set; the force of the blows closing the plates solidly together.

As an evidence as to how rivets fill the holes when driven by the different plans referred to, I submit herewith for inspection three specimens, which are planed through the centre of the rivets and polished so as to show how the metal in the body of the rivets has been forced into the holes in driving. The one marked *A* is hand riveted; *B* was riveted by the set riveting plan and *C* by steam riveting, except the rivet marked *D*, which was hand-driven.

The rivets in all of these specimens were driven under the same conditions as occur in riveting up boilers, and may be regarded as fair specimens of the work done by each plan.

Some of the holes in each row were purposely made so that they did not match fairly when the plates were put together, so as to show how the rivet filled a crooked or offset hole, under the three different plans of driving.

It will be noticed that there is a marked difference in the three different seams as regards the rivets filling the holes. Those driven by the steam riveter, filling as perfectly as it is possible to make them, but it is to those driven by hand, and by the set riveting plan, that are more particularly under consideration in this report.

The plates seem to be drawn together equally well, in the three different specimens, but the rivets do not fill the holes nearly so well when driven by hand, as those driven by the set riveting plan; in fact very few of them fill the hole except immediately under the head. On the other hand those driven by the set plan, in most cases fill the holes perfectly, and they are a very much better job of riveting than those driven by hand; they are as much better than hand driven, as steam driven are better than those driven by the set riveting plan.

Neither of the two samples are perhaps as good as it is possible to drive the rivets, but in the usual manner of doing such work they are fair average specimens of ¾-in. rivets driven in plates $\frac{7}{16}$ in. thick. The reason for such conclusion is based on the result of several different tests, the specimens being planed through the centre of the rivets, the same as these, in order to see how the holes were filled by the body of the rivet in the case of each plan of driving them.

A number of steel boilers in use on the Louisville & Nashville lines have been made in which the rivets were driven by the set riveting plan, including those in the fire-box, throat-sheet, mud-ring, dome flanges, etc.; in fact, almost every rivet in the boiler, including the counter-sunk rivets, a special shaped set being used, however, for the latter. These boilers are all perfectly tight and were so from the first.

Unquestionably, rivets driven by the plan described fill the holes more perfectly than those driven by hand, and the plates are drawn together equally well; and from practical experience in the construction of a number of boilers, the cost of labor in driving the rivets is found to be only about one-half that of driving them by hand, and the time required to do the work is also reduced in the same proportion.

Now if these are the facts, it is difficult to give a reason why hand riveting is so generally practiced where steam riveters are not used; and why set riveting has not heretofore been adopted to a much greater extent, if the plan is a better and cheaper one than the old plan of driving by hand. Set riveting is certainly nothing new under the sun. Experience, however, has demonstrated the fact that skilled labor looks with disfavor upon any plan of doing work whereby unskilled labor is able to accomplish the same thing equally well, at reduced rates of wages. There is a natural inclination to oppose new ways of doing a thing, especially when it involves, to a great extent at least, the abandonment of a practice followed almost universally in the construction of boilers, until partially superseded by steam riveting within the past 15 years. Boiler making is carried on mainly by those skilled in the old way of doing work, and it is not natural that they should desire a different plan, more particularly when it dispenses with what is valuable to them—their skill in driving rivets—and as a class they oppose and discourage the plan of driving rivets by a plan such as a set and sledges. These are doubtless some of the reasons why set riveting has not met with greater favor. It seems to me, however, that this plan of set riveting, owing to its cheapness and expedition in doing the work, should receive more attention in the way of carefully made tests as to the quality of the work done by it, and the cost for labor, than has heretofore been given to it, and it is with the view of calling attention to the plan that this report has been written.

Steam riveters drive from 30 to 60 rivets per hour, depending on the machine, the character of work and the way it is managed, and the cost for labor of the gang driving the rivets varies accordingly from 1.1 cts. to 3 cts. per rivet.

A gang of men driving rivets by the set-riveting plan will average about 26 rivets per hour, taking the whole boiler, at a cost for labor of 2.64 cents per rivet; and to drive them by hand a gang of men will average about 12½ rivets per hour, for the whole boiler, at a cost for labor of 5.84 cents per rivet.

The figures given as to the work done by steam riveters and the cost for labor were furnished by two prominent locomotive-building firms, as the work done by their machines. *All* the riveting in boilers, however, is not done on their steam riveters; a portion of it is done by hand; therefore, taking the whole boiler into account, the average cost per rivet will be considerably above that of the rivets driven by the machines.

The cost of set riveting, as given, is made up from the average day's work in driving rivets in new boilers built, and the cost of hand riveting is that given by those building boilers by that plan of driving rivets, so that the figures given above may be regarded as tolerably accurate in the cost of doing the work by the three different plans of riveting.

Respectfully submitted.

R. WELLS,
Chairman of Committee.

DISCUSSION.

The PRESIDENT said that Mr. Wells had made it clear that button-set riveting was better than hand riveting. If so, they ought to adopt it at once.

Mr. BRIGGS had tried it and found that Mr. Wells conclusions were correct. He had also tried experiments on his own account and found that button-set riveting was much stronger than hand riveting. It was a great revolution in boiler making. The only trouble he had had was that the boiler makers were very much opposed to it.

Mr. SCHAEFER had had much experience and fully agreed

that the set riveting was much better and more economical than hand riveting.

Mr. SETCHEL also agreed that the set riveting was much superior to hand riveting, and thought that many who did not believe in it at first were being convinced. As to cheapness the set riveting was almost as cheap as hand riveting. Further, all the work on a boiler could not be done by steam riveting, especially in a railroad shop. Boiler makers would usually cry down set riveting, and sometimes harsh measures were necessary to make them adopt it.

Mr. WILDER said that he had lately given orders to use set riveting on the Erie in all cases, except where they used steam riveting.

Mr. LEACH thought that with set riveting the rivets filled the hole much better, and there was consequently much less danger of shearing.

The PRESIDENT thought there was not much chance to get up a discussion, as they all seemed to think one way about it. He had decided to adopt the set riveting, and should allow no opposition from the boiler makers.

Mr. WILDER said that they were building five boilers a month and needed less skilled labor than ever before. He thought that they ought to pay more attention to boiler construction than they had usually done. With set riveting they had had much less trouble than with leaky fire-boxes.

Mr. MCCRUM believed the set riveting was much the best and intended hereafter to use it on his road.

The discussion was then closed.

WAGON-TOP AND STRAIGHT-TOP BOILERS—REPORT OF MR. JOHANN.

To the American Railway Master Mechanics' Association:

There having been no arrangements made with the Boiler Committee for this year, owing to the pressure of increased business requiring close attention to the duties of their respective departments, I have been requested by Mr. Wells, Chairman of the Committee, to furnish a paper on boiler matters, in order to keep the subject before the Association.

Although I have been very busy myself during the past year, and entirely unable to prosecute any experiments, I will endeavor to give a few points on boiler construction that may prove to be of some interest for the discussion of members at the coming meeting, and which may be considered as continuation of the papers read by me before the Convention of last year.

As a résumé of my paper of last year, it will be remembered that I made mention of two large boilers for 17 by 24 in. cylinder engines that I built for the purpose of determining by actual experiment the relative merits between the wagon-top and straight-top types of boilers.

For one of these engines I built a wagon-top boiler, after the ordinary and generally accepted type, with a straight and level fire-box crown-sheet.

For the other I built a straight-top boiler, with arched and sloping crown-sheet, and with the crown-sheet stayed by long and direct stays to the boiler crown.*

It was my intention during the past year to have made a series of extended experiments with the two engines having these boilers, but I am exceedingly sorry to say that the circumstances were such that I was prevented from doing so.

In the wagon-top boiler I used a level and flat crown-sheet, as this is the type that is in most general use, but it is however contrary to my usual practice as I prefer an arched and sloping crown-sheet.

The engraving referred to showed the arrangement that I have used in wagon-top boilers for a number of years and in which I slope the crown sheet 1 in. to the foot and arch it with a rise of 3 in. in the centre. I made provision for keeping the crown-sheet as open as possible, by only using about 20 ferrules between the crown-bars and crown-sheet, and those along the centres of the bars. By practical experience I have found this number to be amply sufficient.

The method I use for putting in crown-bolts is to screw the bolt into the sheet, and use a nut and diamond-shaped lipped washer on top of crown-bar, screwing down the nut until a strain is brought on the sheet and then riveting the ends of the bolt inside of the crown-sheet and over the nut; which arrangement has given good satisfaction.

As the wagon-top type of boiler is so nearly uniform in construction throughout the United States, I will say nothing further on the subject.

With the straight-top boiler, however, the case is very different, and as the method of supporting the fire-box crown by long stays has created considerable interest. I can truthfully say, for the benefit of those who have expressed some doubt as to the stability of this arrangement, that the two boilers having this construction, that were designed and built by me in February and August of 1879, have given perfect and entire satisfaction, the steaming qualities being equal to if not greater than in the case of wagon-top boilers.

The engines having these boilers perform their duties in the most satisfactory manner and under the most trying circumstances.

In answer to two other objections that are frequently made against the straight-top boiler, namely:

First. Straight-top boilers will not carry their water as well as wagon-top boilers.

I do not consider this a valid objection, as it has been fully demonstrated in practice that these engines do carry their water equally as well as those having wagon-top boilers, as the engines having these boilers have been pulling our fastest and heaviest passenger trains.

Second. Although the straight-top boiler may be made to do very well on a level road, it will give trouble on a road that has a number of heavy grades. In answer to this objection I can only say that that portion of the road over which these engines are running has a number of grades that are over 40 ft. to the mile, and some of them of considerable length, and furthermore that they have hauled heavy trains over another portion of the road, on which the ruling grade is over 90 ft. to the mile, but we have experienced no difficulty on this account whatever.

The first one of this type of boiler was built for a 15 by 22-in. cylinder engine in February, 1879; and from May, 1879, to February, 1881, both inclusive, this engine has made a mileage of 79,570 miles in passenger service and 4,500 miles in freight and miscellaneous service, being a total of 84,070, or an average of 4,200 miles per month. During all this period neither the flues nor stays gave any trouble or exhibited any signs of leaking.

In February of this year, however, it became necessary to take the engine in shop for new tires, and in order to more thoroughly inspect the condition of the long crown-stays I had the flues removed, and a thorough examination of the crown-stays showed that they were all sound and gave no indications of leaking. With the exception of a thin layer of limestone scale about $\frac{1}{16}$ in. in thickness, the crown-sheet and stays were entirely clear. I then had the flues replaced and the boiler closed without disturbing a single long stay.

The next boiler of this class that I built was for a 17 by 24-in. cylinder engine, the boiler in this case being much larger, 52 in. inside diameter of smallest ring of barrel and constructed to carry a pressure of 150 lbs. per square in.

This engine from October, 1879, to April, 1881, both inclusive, has made a mileage of 69,795 miles in passenger service, and 11,728 miles in freight and miscellaneous service, being a total of 81,523 miles, or an average of 4,300 miles per month. During this time the long stays have shown no signs of weakness, nor have they required the expenditure of a single dollar for labor or material in repairs to the crown-stays.

The expectations under which these boilers were constructed, in preventing sediment from lodging on the crown-sheet, and impairing the heating capacity, have been more than verified, as it has been fully demonstrated that the crown-sheet keeps itself clear from positive sediment and that the stays are abundantly sufficient to sustain the crown.

This system of staying is not considered as anything new or novel, the chief difference being in the arching and sloping of the crown-sheet, which, as I have said before, I consider a great advantage over the level and flat system, both in strengthening the crown and in preventing the lodgment of sediment.

I would like to call attention, however, to another difference which exists in the manner of securing the long stays. My method is to use 1 in. round iron, upset at one end to admit of an $1\frac{1}{16}$ in. thread.

The holes in boiler crown are tapped out to $1\frac{1}{8}$ in. and in fire-box crown to 1 in. thread, special taps and reamers having been made for the purpose. The stays are then screwed into place and cut off, within $\frac{1}{16}$ in. of the inside and outside crowns, and riveted over with a few well-directed blows of the hammer.

As a comparison between this and some other method I furnish some examples of European practice.

The London *Engineer* of March 4, 1881, page 159, gives an adaptation of the well-known European Belpaire system to a locomotive built in England for the Holland State Railway.*

In this system both the fire-box and boiler crowns are flat and level, and the stays are secured by means of nuts on the outside of boiler crown, and on the outside and inside of fire-box crown. The making of the boiler crown flat necessitates an increased amount of transverse and longitudinal staying, and this, with the other objections to flat and level crown-sheets previously enumerated, prevents me from agreeing with our English friends when they say that this is the only correct shape for direct staying.

One of the objections the English find with direct staying as represented by the Belpaire system is that they prevent the free upward expansion of the fire-box, thereby crushing the flue-sheet and rendering the top two or three rows of flues more or less oval in shape where they enter the flue-sheet.

I account for this, however, by the persistence with which they retain the use of copper in fire-boxes, and in the using of a large number of flues, necessitating the making of very light bridges between them.

In the *Railroad Gazette* of April 8, 1881, page 191, is an illustration of a method patented by Mr. Stanhope Perkins, of the Manchester, Sheffield & Lincolnshire Railway in England.

In this case the manner of securing the stays is sufficiently explained by the engraving, and I will simply say that he adopts this method to overcome the crushing of flue-sheet and tubes, which he does do in a certain measure by tightening up the nut at the lower end of the long stays until he strains the crown-sheet upward, which undoubtedly aids the ordinary expansion of the fire-box.

As you will very readily see, however, this arrangement requires a large amount of labor, and in its complicated construction does not fully secure the desired result of obtaining an open crown-sheet. Being much more expensive to construct, it is very questionable whether it would be as substantial as crown-bars.

In an article and illustration from the London *Engineer* of March 18, 1881, page 203, the writer and designer claims that the method of Perkins is a colorable imitation of his, he having used this method to prevent the collapsing of tubes some six years ago. He allows for the upward expansion of fire-box by slotting the upper ends of the two forward rows of long stays, saying that experience has taught him this allowance need only be made on these two rows.

In this last system there appears to me to be the following absurdity: Suppose the fire-box should expand and allow the upper end of the long stay to move away from the supporting pin by means of the slot, what would support that part of the crown-sheet? And if it should occur, why the necessity of stays at all? as it is only when there is fire in the fire-box and steam pressure in the boiler that the necessity for supporting the crown exists.

If there is anything in this collapsing of the flue-sheet, due to expansion, I must have overcome it by using $\frac{1}{2}$ in. steel in flue-sheets and allowing $\frac{3}{4}$ in. bridges between flue openings, as I have experienced no difficulty from this source whatever.

From these illustrations I think you must admit that the staying in the plan used in my boiler is very much the simplest, and consequently the most economical in construction; and as to stability, it has been demonstrated by actual practice that the engines possessing these boilers, and engaged in hauling fast and heavy passenger trains, have made a mileage of over 80,000 miles, without having exhibited any signs of leakage or other disturbance, and that the crown-sheets are in good and clean condition at the present day.

JACOB JOHANN,
Master Mechanic Illinois & Chicago divisions, Wabash, St. Louis & Pacific Railway.

DISCUSSION.

Mr. SETCHEL did not approve of the method of putting on the crown bar with a crown-bolt simply screwed through the sheet and lightly riveted down. The sheet was very likely to go down with nothing more to hold it. It was not nearly as strong as if there was a nut on the bolt, or if the bolt was turned the other way. Again, as far as the form of the sheet was concerned, if the scale did not form on the sheet, it would still gather on the stay-bolts. In some cases, also, the stay-bolt would not pass through the crown sheet at right angles, and the thread would be shorter and weaker.

Mr. WIGGIN said that on his road they had several sloping crown-sheets, and he had found that they held just as much scale as the flat ones. Their water also would eat right into the crown sheets, and he thought the stay-bolts would loose their hold in a short time.

Mr. HAYES said that the system of holding the crown sheet up by stay-bolts had been tried many years ago. It had been used by Winans on the Baltimore & Ohio. The trouble was that the crown-sheet was liable to go down. They had, however, put a nut on the bolt, making it much stronger. The only advantage he saw in a sloping crown-sheet was that the scale could be washed off much more easily when it was in a semi-liquid state and had not hardened. On his road scale collected on a vertical plate almost as much as in any other position.

The PRESIDENT asked whether the accumulation on the crown-sheet was true scale, carbonate of lime, or only a deposit of muddy sediment. The sediment would vary with position of the sheet; the scale would form anywhere.

Mr. HAYES said he referred to hard scale, composed of carbonate of lime, sulphate of lime and clay. It was the lime which made the hard scale; the clay could be washed out.

The PRESIDENT thought that the sloping crown-sheet would not prevent the formation of hard scale, but it might be of use in many places where the trouble was from sediment deposited by muddy water. There might also be some advantage in getting a little more water over the crown-sheet.

Mr. MCCRUM thought a crown-bolt passed through from below, with a nut on top, made a much better guide than the stay-bolts as shown in the plan under discussion. Sloping of the crown-sheet made little difference, but there was some advantage in arching it. He always raised up his crown-bars as high above the sheet as he could get them, and the higher they were the less scale formed there. About once a year, when the flues were taken out, the scale could be easily removed. The riveting on the stay-bolts did not amount to much.

Mr. PHILBRICK referred to the practice of some boiler makers of putting the bolts through the sheet and putting on a nut outside. He found that the nuts would burn off and leave the crown-sheet leaky. In that case they were very hard to make tight. He preferred to screw the crown-bolts well through the sheet and then rivet the end thoroughly.

Mr. HAYES said that he had had boilers in use eight years and the nuts had not burned off. They used a thin nut. He had tried many experiments and had in no case found the strength of a rivet more than equivalent to one-third of that of the bolt.

Mr. PHILBRICK thought it strange that nuts would burn off with them. It would seem that they ought to burn off more quickly when there was much sediment deposited. He thought the crown-sheet could be held by bolts screwed through and then riveted just as well as the side-sheets, and he had never heard of nuts on the side stay-bolts.

Mr. BRIGGS recommended the report of Chief Engineer Sharpe, of the navy, on the strength of stay-bolts. He spoke of the advantages of hollow stay-bolts. On his road he thought them a necessity. It was easy to determine whether they were broken or not by sounding with a hammer.

Mr. HAYES said that the stay-bolts were subject both to tensile and transverse strains. Stay-bolts almost always broke near the outer sheet. They used hollow stay-bolts.

Mr. SCHAEFER thought hollow stay-bolts were pretty expensive. It would do about as well as if the bolt were bored nearly all the way through.

Mr. SETCHEL thought the best way was to put the bolt through from below and the nut on top. It was stronger than having the nut below and very much stronger than screwing the bolt through and riveting it. You had the full strength of the bolt.

Mr. EASTMAN had been accustomed to putting a countersunk head and either riveting the top or putting a nut on the top of the crown-bolt, and had never had any trouble.

Mr. SETCHEL said that the chances of the bolt being tight were very much better if it was tapped through the sheet.

Mr. WOODCOCK said that they had recently tried the plan of screwing the crown-bolts through from below. They had had boilers where the crown-bolts were not screwed through the sheet, and found that they would leak after a time. The crown-bars could not be too well secured, especially with a flat crown-sheet.

Mr. HIGGIN had found that the arched crown-sheets filled up with scale just as much as the flat ones. He left three plugs on a side, so that the condition of the crown-sheet could be inspected at short intervals.

Mr. HAYES said they had been using hollow stay-bolts for many years. They had the hollow bolts made especially for them. They used the hollow stays wherever the stay-bolts were likely to break; at other points they used solid bolts because they were much cheaper.

The discussion was then closed.

* Engravings of these were published in the *Railroad Gazette* of June 4, 1880.

*An engraving of a similar boiler was published in the *Railroad Gazette* of July 9, 1880.

Train Accidents in June.

The following accidents are included in our record for the month of June:

REAR COLLISIONS.

On the morning of the 1st a passenger train on the Chicago, Burlington & Quincy road ran into a freight train at Naperville, Ill., and the engine was slightly damaged.

Very early on the morning of the 5th a freight train on the Ohio & Mississippi road ran into some cars which had broken loose from a preceding freight near Prosser Switch, Ind., wrecking the caboose. The engineer jumped and was hurt. A signal had been sent back, but the second train was too close to be stopped.

On the morning of the 16th a freight train on the Pittsburgh & Lake Erie road ran into a preceding freight near Hazleton, O., damaging several cars.

On the evening of the 16th a freight train on the New York & New England road ran into some cars standing in the yard at Willimantic, Conn., damaging several of them and injuring the fireman. It is said that the cars had been run out of siding by boys who had taken off the brakes.

On the morning of the 23d a freight train on the Burlington, Cedar Rapids & Northern road ran into the rear of a special passenger train near Nichols, Ia., damaging a parlor car.

On the night of the 23d a freight train on the New York Central & Hudson River road ran into a preceding freight near Cold Spring, N. Y., wrecking several cars.

Near noon on the 24th a passenger train on the New Haven & Northampton road ran over a misplaced switch and into a freight train standing on the siding at Bosworth Quarry, Mass. Both engines were damaged and two trainmen slightly hurt.

On the morning of the 28th a freight train on the Chicago, Burlington & Quincy road ran into some cars which had broken loose from a preceding freight, near Hinsdale, Ill., wrecking several cars, killing two men in the caboose and injuring three others.

On the morning of the 29th a freight train on the Wabash, St. Louis & Pacific road ran into the rear of a preceding freight, part of which had just been wrecked by the wind near Keller's, Ind. The engine and several cars were wrecked. The gale was so severe that it was impossible for a man to keep his feet with a flag.

On the night of the 30th a Chicago & Eastern Illinois passenger train ran over a misplaced switch and into a Chicago & Grand Trunk freight which was standing on a siding in the yard of the Chicago & Western Indiana, at Kensington, Ill., wrecking an engine and three passenger cars.

BUTTING COLLISIONS.

Very early on the morning of the 5th there was a butting collision between two freight trains on the Chicago & Northwestern road, near Cedar Rapids, Ia., by which both engines and several cars were piled up in a bad wreck, two trainmen killed and four hurt. It is said that one train should have been held at Cedar Rapids, but the operator there failed to give the order.

On the morning of the 7th there was a butting collision

between two freight trains on the Wabash, St. Louis & Pacific road, near Burnside, Ill., by which both engines and several cars were wrecked and a brakeman hurt.

On the 7th there was a butting collision between two freight trains on the Ohio & Mississippi road, near East St. Louis, Ill., by which both engines and several cars were damaged, a fireman killed and an engineer badly hurt.

On the afternoon of the 8th there was a butting collision on the New York Central & Hudson River road at Morris Dock, N. Y., between a passenger train and a wrecking train, which was running backwards to reach a switch and get on the opposite track, to be better able to handle a wreck. The wrecking car and the passenger engine were both badly broken, blocking the track three hours. It is said that no signals had been set to warn the passenger train, but it was known that there was a wreck ahead.

On the afternoon of the 17th there was a butting collision on the Union Pacific near Wathena, Kan., between a freight train and a construction train running backwards. Several cars were wrecked, three men killed and two hurt. It is said that the operator at Wathena had orders to hold the freight, but forgot to do so. He was arrested.

On the 18th there was a butting collision between a freight and a construction train on the Texas & Pacific road, near Baird, Tex. Both engines were wrecked, an engineer and a fireman killed.

On the night of the 23d there was a butting collision between a freight and a passenger train on the Chicago, Rock Island & Pacific road, near Buffalo Rock, Ill. Both engines and a car were badly damaged and three trainmen slightly hurt. The operator had been ordered to hold the passenger train at Buffalo Rock, but failed to do so.

On the night of the 26th there was a butting collision between two freight trains on the Chicago, Burlington & Quincy road near Woodburn, Ia. Both engines and several cars were wrecked, both engineers and a fireman hurt and a brakeman killed.

On the morning of the 28th there was a butting collision between two freight trains on the Philadelphia & Erie road near Five-mile curve, Pa. Both engines and about 20 cars were piled up in a very bad wreck, blocking the road all day.

On the night of the 30th a freight train on the Missouri Pacific road broke in two near Webster, Mo., and the detached cars ran back down grade and into the head of a following freight. The engine and several cars were wrecked.

DERAILMENTS, BROKEN RAIL.

On the night of the 8th, five cars of a freight train on the Chicago, St Paul, Minneapolis & Omaha road were thrown from the track near Nicollett, Minn., by a broken rail.

On the evening of the 24th a passenger train on the Chicago, St. Paul, Minneapolis & Omaha road ran off the track near Eau Claire, Wis., damaging several cars. The accident was caused by a broken rail.

DERAILMENT, BROKEN RAIL-JOINT.

On the afternoon of the 29th, a passenger train on the Southwestern Georgia road was thrown from the track near Geneva, Ga., by a broken rail-joint, and three cars were upset down a bank and wrecked, injuring seven persons badly, and eight slightly.

DERAILMENTS, BROKEN WHEEL.

On the morning of the 5th a car of a freight train on the New York, Lake Erie & Western road was thrown from the track near Goshen, N. Y., by a broken wheel.

On the 14th several cars of a ballast train on the Credit Valley road were thrown from the track at Milton, Ont., by a broken wheel, killing one laborer and injuring three others.

On the morning of the 22d a car in a passenger train on the Central Railroad, of New Jersey, was thrown from the track near Bound Brook, N. J., by a broken wheel.

On the morning of the 26th a car of a special passenger train on the New York Central & Hudson River road was thrown from the track near Crittenden, N. Y., by a broken wheel.

On the night of the 30th six cars of a freight train on the Illinois Central road were thrown from the track near Peotone, Ill., by a broken wheel. The wreck caught fire and was burned.

DERAILMENTS, BROKEN AXLE.

On the 14th several cars of a freight train on the Pittsburgh, Cincinnati & St. Louis road were thrown from the track near Unionville, O., by a broken axle.

On the afternoon of the 21st a freight train on the Montauk Division of the Long Island road was thrown from the track near Oakdale, N. Y., by a broken axle under the tender. The engine and eight cars went down a bank and were wrecked, injuring a brakeman fatally.

On the evening of the 22d eight cars of a freight train on the Chicago, Burlington & Quincy road were thrown from the track near Downer's Grove, Ill., by the breaking of an axle.

DERAILMENT, BROKEN BRIDGE.

On the afternoon of the 1st a freight train on the Missouri, Kansas & Texas Extension broke through a wooden bridge near Ft. Worth, Tex., and the engine went down into the Trinity River, with nine cars piled up on top of it. A brakeman was killed, the engineer and fireman hurt.

DERAILMENTS, SPREADING OF RAILS.

On the afternoon of the 4th several cars of a passenger train on the Pittsburgh Southern road were thrown from the track near Rainey, Pa., by the spreading of the rails.

On the morning of the 25th a freight train on the Chicago, Milwaukee & St. Paul road was thrown from the track near Yankton, Dak., by the spreading of the rails. The track had only lately been relaid after being nearly destroyed by the great freshet in March.

DERAILMENTS, ACCIDENTAL OBSTRUCTION.

On the morning of the 4th a freight train on the Chicago, Milwaukee & St. Paul road ran into a rock which had fallen on the track near Waukon Junction, Ia., and the engine and six cars were thrown from the track and wrecked. The conductor was hurt.

On the afternoon of the 8th a local passenger train on the New York Central & Hudson River road was thrown from the track near Kingsbridge, N. Y., by a stone which had become in some way wedged in between the rail and the planking of a road crossing. The engine upset across both tracks and was wrecked, blocking both; the tender went down a bank and almost into the Spuyten Duyvil Creek, and one car was thrown across the track. The engineer was slightly hurt. The road was blocked seven hours.

On the 9th several cars of a freight train on the Chicago, Milwaukee & St. Paul road were thrown from the track near Port Byron, Ill., by a draw-bar which pulled out and fell across the rail.

On the afternoon of the 22d several cars of a freight train on the Shenandoah Valley road were thrown from the track near Boyceville, Va., by some lumber which fell from a badly loaded car. Two brakemen were hurt.

DERAILMENTS, CATTLE.

On the night of the 4th a freight train on the Ohio & Mississippi road struck a cow near Sparksville, Ind., and the engine was thrown from the track. The fireman jumped, struck a telegraph pole and was killed. The engineer remained on the engine and was not hurt.

At midnight on the 20th a way freight train on the Iowa City Branch of the Burlington, Cedar Rapids & Northern road struck a cow close to the bridge over the Iowa River near Iowa City, Ia. There were two flat cars ahead of the engine, and one of these was thrown over against one of the bridge trusses and knocked it down. One span of the bridge went down, and the engine followed down a very steep bank into the river. The engineer and a brakeman were killed, and another brakeman hurt.

On the afternoon of the 21st a freight train on the West Penn. Division of the Pennsylvania Railroad ran over a cow close to a bridge. The engine was thrown from the track and ran up to the bridge on the ties, striking one end of the truss and knocking it down. The engine went down with it and nearly all of the cars followed and were piled up in a bad wreck in the river. The engineer, fireman and another man were killed.

DERAILMENTS, WASH-OUT OR LAND-SLIDE.

On the evening of the 9th a freight train on the Lake Shore & Michigan Southern road ran into a wash-out near Hadley, Pa., and the engine went down into the gap with several cars on top of it. The fireman and a brakeman were killed, the engineer and a brakeman hurt.

About noon on the 10th a freight train on the Philadelphia & Erie road ran into a land-slide near Lock Haven, Pa., and nearly the whole train was thrown from the track, killing one man and injuring four others.

On the afternoon of the 19th a passenger train on the Atchison, Topeka & Santa Fe road ran into a wash-out near Las Cruces, N. M., the engine passing over while two cars went down and were wrecked, injuring five persons slightly.

Early on the morning of the 28th a freight train on the Buffalo, New York & Philadelphia road ran into a land-slide near Protection, N. Y. The engine and four cars were wrecked, a brakeman killed, the fireman and a brakeman badly hurt.

DERAILMENT, WIND.

On the morning of the 29th a freight train on the Wabash, St. Louis & Pacific road was struck by a tornado near Keller's, Ind., and 14 cars were blown from the track and down a bank.

DERAILMENTS, MISPLACED SWITCH.

On the evening of the 8th a freight train on the Philadelphia & Reading road was thrown from the track in Lebanon, Pa., by a misplaced switch.

On the morning of the 13th a passenger train on the New York, New Haven & Hartford road was thrown from the track at New Rochelle, N. Y., by a misplaced switch. But little damage was done.

At noon on the 17th a passenger train on the Toledo, Delphos & Burlington road was thrown from the track at Delphos, Ind., by a misplaced switch. The engine and cars upset, and a passenger was hurt.

On the morning of the 21st the engine and four cars of a freight train on the Pennsylvania Railroad were thrown from the track at Brinton, Pa., by a misplaced switch.

On the morning of the 23d a freight train on the Northern Central road was thrown from the track at Gillett, N. Y., by a misplaced switch. The engine upset, killing the engineer.

MALICIOUS DERAILMENTS.

On the night of the 8th the engine of a passenger train on the Louisville & Nashville road was thrown from the track near Columbia, Tenn., by a piece of iron which had been wedged into the frog by some person unknown.

On the evening of the 15th a passenger train on the Schuylkill & Lehigh road was thrown from the track near Reading, Pa., by a large log which had been laid across the rails by persons unknown. The engine was badly wrecked, the fireman killed and the engineer hurt.

Early on the morning of the 18th a freight train on the Louisville & Nashville road was thrown from the track at Bowling Green, Ky., by a switch, which is believed to have been purposely misplaced. The engine upset, killing the fireman.

On the morning of the 25th a passenger train on the Springfield, Effingham & Southeastern road broke through a wooden trestle bridge near Effingham, Ill., and was wrecked, injuring three trainmen. It was found that several of the trestle posts had been sawed through in such a manner that they were sure to give way when the weight of the train came on them. It is believed that this was done by unpaid laborers.

UNEXPLAINED DERAILMENTS.

On the morning of the 1st two cars of a freight train on the New York Central & Hudson River road ran off the track near Chili, N. Y., and were wrecked.

On the morning of the 2d several cars of a freight train on the Pennsylvania Railroad ran off the track near Monmouth Junction, N. J., and some of them were badly damaged.

On the morning of the 2d a freight train on the Intercolonial road ran off the track near Truro, N. S., blocking the track two hours.

On the morning of the 5th several cars of a freight train on the Texas & St. Louis road ran off the track in Texarkana, Tex., and the caboose upset, killing one brakeman and injuring two others.

On the morning of the 6th a freight train on the Denver, South Park & Pacific road ran off the track near Buena Vista, Col., the engine and several cars going down a bank in a bad wreck. Three trainmen were killed and one hurt.

On the 7th a freight train on the Cincinnati Southern road ran off the track near Spring City, Tenn., blocking the road all day.

On the afternoon of the 7th the mail and baggage cars of a through passenger train on the Boston & Lowell road jumped the track in Lowell, Mass., and ran over against some cars on a siding. The baggage car was badly broken and the baggage master hurt.

On the afternoon of the 8th a yard engine of the Missouri Pacific road ran off the track in St. Louis, Mo., and upset, injuring the engineer and fireman.

On the evening of the 8th a construction train on the Chicago & Northwestern road ran off the track near Blue Mound, Wis., and the engine upset, injuring five men.

On the 10th a repair train on the Galveston, Harrisburg & San Antonio road ran off the track near San Antonio, Tex., damaging the engine and four cars and injuring the engineer.

On the evening of the 13th several cars of a freight train on the New York Central & Hudson River road ran off the track in Buffalo, N. Y., and were wrecked.

On the evening of the 22d several cars of a freight train on the Chicago, Burlington & Quincy road ran off the track near Naperville, Ill., blocking the road two hours.

On the night of the 22d a freight train on the New York, Lake Erie & Western road ran off the track near Castile, N. Y., damaging the engine and three cars.

On the afternoon of the 28th several cars of a freight train on the New York, Lake Erie & Western road ran off the track near Rutherford Park, N. J., blocking the road an hour.

On the night of the 28th two cars of a freight train on the Chicago, Milwaukee & St. Paul road ran off the track and down a bank into the river near Whelan, Minn. Two brakemen were hurt.

On the morning of the 30th a passenger train on the Atlanta & Charlotte Air Line ran off the track on the trestle at Enoree, S. C. Nearly the whole train left the rails, but did not go off the trestle, which is 50 ft. high.

OTHER ACCIDENTS.

On the morning of the 9th an express car on a passenger train on the Long Branch Division of the Central Railroad, of New Jersey, caught fire when near Little Silver, N. J., and was destroyed.

On the night of the 21st a car of a freight train on the Central Railroad, of New Jersey, caught fire near Bayonne, N. J., and was destroyed. It set fire to a road bridge over the track, which was also destroyed.

This is a total of 73 accidents, whereby 31 persons were killed and 78 injured. Twenty accidents caused the death of one or more persons; 17 caused accident, but not death, while in 36 cases, or 49.3 per cent. of the whole number, there was no injury to persons recorded.

Contributions.

Errors in the Report on Wheels.

Michigan Central Railroad Company,
DETROIT, Mich., July 18, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

By request of Mr. R. Miller I write, wishing to call attention to an error made by the printers in setting up report on wheels made to the Master Car-Builders, which might tend to mislead some persons. I allude to the statement marked "Statistical Memoranda," in which you state the cost per 1,000 miles run for one wheel net as $7.92. It should be 7.92 cents, and so with the two following statements, 8.73 cents and 11 cents.

It was not supposed by us that this report would be published in full, as we thought the Chairman of the Committee would simply have used such part of it as was necessary to elucidate the subject and draw the consequent conclusions from the data given, or we should have prepared it with more care and in better form. F. C. ADAMSON,
Chief Clerk Car Department.

Atchison, Topeka & Santa Fe Railroad Co.,
TOPEKA, Kansas, July 14, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE:

We sent to the Chairman of Committee on Wheels a statement of our paper wheels, which I see you have omitted. We have a set of 42 in. paper wheels under a sleeper which have made 252,403 miles without turning; also a pair of engine paper truck wheels that have made 65,110. This pair of wheels is under the "Uncle Dick" and running on the sharpest curves on the road over the Raton Mountains—a 53-ton engine. GEO. HACKNEY.

Locomotive Tire Flanges, Etc.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of July 1 are representations from the London *Engineer* of several styles of flanges for locomotive tires used in England, with the statement from that journal that "the question is one concerning which little or no information exists," to which is added your own statement that a similar diversity of form exists in this country, "and that there are apparently no reasons for preferring one form rather than another.

This item will, it is to be hoped, bring out some information in this obscure matter, as there must certainly be some principle or philosophy to settle the question of the proper height, thickness and slope of a locomotive flange.

And while this discussion is up, can any one tell why the flange of a hand car is made thinner and more vertical with the tread than on regular cars and locomotives?

And what is the proper cone for a car wheel or locomotive wheel; and, should the larger wheels have a different cone from the smaller; also how much is a proper clearance for wheels on 4 ft. 8½ in. gauge tracks; and are there any roads now using 4 ft. 9 in. or 4 ft. 10 in. gauge. H.

[If "H" will open to the General Index of the *Travelers' Official Railway Guide*, he will find each name of a railroad company preceded by figures giving the gauge of its roads; while the 4 ft. 10 in. gauge has almost completely disappeared, there is an enormous mileage of 4 ft. 9 in. road, including the whole immense system of the Pennsylvania Railroad Company, from New York, Baltimore and Washington in the East to Chicago, St. Louis and Louisville in the West, and several other important roads. There are some also of 4 ft. 9¼ in. and 4 ft. 9½ in. gauge. The changes that were made in reducing the difference between the 4 ft. 10 in. and the 4 ft. 8½ in. gauge have generally been made gradually, and it is not easy to trace them always; the more so as companies whose tracks are fitted for standard-gauge often report them of 4 ft. 8½ in. gauge, when in fact they are ½ or ¾ in. wider. Some very important roads are reported in the *Official Guide* as of 4 ft. 8½ in. gauge, when, if not changed within a few years, they are actually 4 ft. 9¼.—EDITOR RAILROAD GAZETTE.]

—Col. L. Mott was killed by a train at Columbus, Ga., July 19. He was 80 years of age, a well-known citizen of that town, and for several years Vice-President of the Mobile & Girard Company.

TABLE SHOWING THE MILEAGE, CAPITAL, COST AND REVENUE OF ALL THE RAILROADS OF THE UNITED STATES FOR 1880.

States and Territories.	Railroads. Length of line.	Sidings, etc., etc.	Miles of steel rails.	Engines.	Cars. Passenger.	Cars. B. M. & E.	Cars. Freight.	Capital Account. Capital Stock.	Capital Account. Funded Debt.	Capital Account. Other Debt.	Capital Account. Total Amount.	Cost of Railroad and Equipment.	Railroad Operated.	Revenue Account. Gross Earnings.	Revenue Account. Working Expenses.	Revenue Account. Net Earnings.	Interest paid on Bonds.	Dividend paid on Stock.
	M.	M.	M.	No.	No.	No.	No.	$	$	$	$	$	M.	$	$	$	$	$
Maine	1,059.87	142.06	208.08	157	155	72	2,209	17,519,532	20,724,613	668,187	38,912,332	39,434,181	1,008.87	3,883,754	2,293,858	1,589,896	979,137	448,686
New Hampshire	876.49	154.38	107.45	144	142	62	2,712	18,558,332	6,806,800	1,236,192	26,601,314	26,455,058	727.19	3,542,728	2,332,812	1,209,916	357,907	805,346
Vermont	835.19	115.73	198.92	167	125	55	3,222	19,166,000	17,983,300	778,973	37,958,273	38,357,644	917.36	4,582,215	3,339,571	1,188,644	3 9 2,70	145,128
Massachusetts	2,124.00	1,377.24	1,392.73	968	1,211	307	18,448	92,619,221	54,274,349	9,9 9,071	156,8 3,644	152 843,119	2,304.58	26,555,496	17,334,334	9,221,162	3,4 4,2 4	4,060,735
Rhode Island	153.16	69.35	80.00	41	51	16	386	4,593,547	1,9 98,40	96,827	6,631,66	5,855,025	137.54	1,195,520	771,248	424,272	128,175	240,000
Connecticut	906.32	311.56	611.80	221	348	137	4,681	34,935,610	12,518,8 8	1,260,8 4	48,715,362	975.60	9,049,956	5,4 3,1 1	3,509,855	517,676	2,299,296	
New England	5,959.70	2,100.31	2,678.98	1,893	2,032	649	31,721	187,895,522	113,526,340	13,950,127	314,871,989	312,121,6 3	6,071.14	48,755,6 9	31,561,924	17,193,685	5,346,369	7,999,191
New York	5,975.96	4,306.09	2,783.38	2,048	2,142	461	55,149	557,699,972	217,705,441	18,20 ,821	587,6 6,234	572,786,895	5,966.76	72,134,581	44,178,082	27,956,499	12,150,225	11,713,098
New Jersey	1,667.67	944.20	1,036.03	708	930	154	24,567	82,155,300	108,056,094	8,799,5 9	199,011,347	174,774,4 9	1,3 8.57	24,012,151	15,8 6,6 1 9	8,129,6 22	4,98,881	3,7 7,913
Pennsylvania	6,4 1.36	4,23 .68	4,540.25	2,758	1,719	913	148,391	310,328,6 0	342,1 5,964	20,67 ,312	682,104,8 6	42 ,49 ,9 0	5,958.26	87,867,458	46,41 ,684	41,249,7 4	18,934,4 1	11,7 9,496
Delaware	222.82	14.60	9.20	8	11	5	102	2,451,894	1,501,000	68,9 9	4,021,383	3,8 4,591	24 .2	579,933	4 6,6 6	173,324	78,1 0	240,000
Maryland	1,072.12	579.73	221.0 9	558	312	90	13,951	31,216,012	51,927,360	1,715,836	84,859,2 8	78,627,467	1,117.27	13,6 9.3 5	7,630,434	6,0 8,9 1	3,191,664	1,347,444
West Virginia	295.46	87.31	76.0	17	7	4	97	3,216,9 0	2,925,000	46,4 1	6,188,321	11,020,6 2	326.1	970 240	561,38	408,853	14,0 0	0
Middle States	15,335.39	10,119.21	8,665.95	6,097	5,091	1,617	252,257	780,968 618	724,220,863	53,501,738	1,558,691,219	1,242,155,044	14,881.69	199,003,718	115,080,322	82,923,393	38,666,290	28,479,891
Virginia	2,028.88	220.27	899.52	3 0	179	108	5,872	58,742,082	58,9 9,816	2,180,048	119,881,946	111,469,670	1,886.89	8,763,245	5,535,833	3,227,412	966,108	314 8 5
North Carolina	1,469.14	80.91	165.66	146	97	43	1,626	20,225,200	11,886,100	619.2 9	32,730,559	23,8 7,234	1,4 5.20	2,266,494	1,938,07	328,423	40 ,431	280,443
South Carolina	1,221.95	88.62	175.85	146	111	3	1,562	16,505,107	15,381,533	968,978	32,855,618	30,424,6 6	1,2 4.9	3,488,694	2,440 ,20	1,4 8,488	651,281	0
Georgia	2,616.63	149.23	308.75	3 8	213	117	4,409	31,380,615	23,033,200	1,103,527	55,517,342	49,676,723	2,515.18	8,4 9 6 8	4,99 ,6 3	3,429,13	1,451,111	1,6 9,996
Florida	454.10	20.23	0	38	49	17	673	3 235,0 0	4,188,000	0	7,423,000	6,49 ,000	3 9.3	599,5.2	500,501	99,071	15,332	0
Alabama	2,0 6.26	149.60	382.49	217	136	57	3,181	30,869,118	36,808,500	1,544,539	69,222,157	78,102,210	1,6 5.46	5,2 9,7 9	3,419,0 6	1,87 ,789	1,4 0 582	0
Mississippi	1,42 ,93	27 98	1.00	41	30	14	333	3,426,.85	6,293 492	432,203	10,0 2,340	8,176,072	376.43	1,07 ,575	66 ,5..	4 6,523	23 3 15	0
Louisiana	1,21 .48	131.23	69 .00	163	127	25	2,420	16,544,738	27,27 ,500	3,9 1	44,820,139	44,869,343	7 5.48	3,288,318	2,3 3,82	684,497	214,368	80,000
Tennessee	1,4 6.80	108.41	354.05	102	94	2,918	17,503,853	24,985,000	2,335,0 8	44,823,743	46,9 6,741	1,343.18	5,5 5,955	3,472,896	2,0 2,5 7	1,353,219	39 , 93	
Kentucky	1,936.16	223.66	577.41	280	155	75	6,6 0	27,788,417	52,312,714	8,194,355	88,2 5,486	69,261,896	2,080.63	8,068,956	4,961,725	4,37,191	1,6 5,9 4	840, 0
Southern States	15,912.31	1,200.14	3,526.63	1,839	1,199	518	29,104	226,220,518	260,909,858	17,381,957	504,512,330	468,940,551	13,548.56	48,317,754	30,193,720	18,124,034	8,0 6,591	3,525,977
Ohio	7,406.31	1,963.07	1,419.30	1,859	966	436	55,316	250,937,015	265,564,719	12 552,818	529,054,552	493,509,8 7	6,775.08	62,314,749	37,963,538	24,651,211	8,580,729	8,992,100
Michigan	3,6 7.18	1,127.81	1,209.94	581	387	135	16,193	74,062,6 2	65,388,042	8,7 2,680	148,263,324	136,6 6,961	3 3 6.6	19,297,775	12,591,2 9	6,706,566	3,448,8 0	1,9 3,482
Indiana	5,069.31	758.25	2,120.94	1,048	527	271	28,302	122,476,9 5	100,011,758	6,5 8,273	229,024,996	213,462,348	5,163.96	31,813,948	22,1 6,429	9,7 7,519	4,5 2,686	646,718
Illinois	9,383.20	1,997.02	4,94 .49	1,926	892	399	55,439	231,415,738	195,489,365	22,1 58,817	448,8 4,915	390,922,563	9,86 .49	71,2 9,745	33,957,423	37,332,132	11,87 ,88	11,921,938
Wisconsin	5,034.21	496.43	1,7 8.20	482	226	139	13,235	70,845,786	78,62 ,516	3,4 9,937	152,896,239	152,507,5 6	3,9 0.73	15,482,639	9,236,470	6,146,169	3,7 0,058	1,937,462
Minnesota	4,025.58	214.66	673.17	278	125	82	8,478	130,696,390	43,812,952	5,5 6,9 0	180,086,282	194 624,834	2,672.00	9,333,880	5,212,9 5	4,140,985	1,4 9,717	168,278
Dakota Territory	209.11	5.50	209.11	10	0	2	1,10	12,500	915,000	557,611	1,4 5,111	1,485,111	0	0	0	0	64,050	0
Iowa	2,852.00	226.98	698.44	187	91	67	4,49	46,937,976	38,697,920	1,965,918	85,601,814	89,236,600	2,157.85	6,611,435	3,803,671	2,807,764	1,932,246	1,166,278
Nebraska	2,782.65	300.00	895.0	313	191	73	5,777	50,762,300	116,162,6 8	2,334,277	169,259,203	170,8 6,629	3,326.15	24,147,262	12,218,562	11,933,700	5,174,4 3	3,6 2,0 6
Kansas	1,814.93	112.69	358.51	220	101	47	6,8	49,044,100	40,907,415	2,700	89,954,215	84,1 3,828	1,950.48	10,518,145	5, 9 5,225	4,92 ,529	998,87	1,947,195
Missouri	3,875.32	558.44	1,490.12	581	259	123	14,397	92,782,181	95,011,150	474,900	188,270, 31	227,822,761	3,452.34	24,8 3,330	14,2 4,07 5	9,8 4,255	5,577,448	525,738
Arkansas	591.91	28.71	1.00	48	34	18	2,6	11,602,135	7,475,113	657,345	19,7 5,593	18,438,045	351.16	1,227 341	658,072	568,269	352 700	0
Texas	3,219.06	182.16	491.40	251	147	60	4,215	38,921,254	61,395,533	4,0 3,010	104,376,797	102,178,143	2,531.31	10,968,074	6,244,298	4,723,7 6	1,7 6,761	0
Colorado	684.50	42.30	397.20	101	57	32	2,617	16,000,000	17,398,000	1,536,000	34,934,0 0	34,945,951	474.00	3,4 8,067	1,7 ,695	1,710,462	849,280	240,000
Western and Southwestern States	50,585.29	7,924.05	17,026.12	7,895	3,994	1,884	217,947	1,186,496,937	1,124,843,109	70,498,226	2,381,838,272	2,290,201,197	45,910.51	290,588,190	165,421,972	125,166,218	49,474,773	33,117,590
New Mexico Territory	681.70	50.00	0	0	0	0	0	1,950,000	1,462,530	0	3,412,500	3,412,500	0	0	0	0	0	0
Arizona Territory	384.00	30.00	0	0	0	0	0	10,000,000	20,000,000	0	30,000,000	29, 90,921	0	0	0	0	0	0
Utah Territory	515.05	83.00	0	15	6	2	302	3,000,000	3,734,000	0	6,734,000	6,3 4,000	105.00	394,885	217,577	177,308	120,240	9 ,000
Nevada	322.70	54.00	143.00	36	11	8	531	23,0 0,000	1,900,000	0	24,900,000	24,9 0,000	145.70	1,232,785	783,038	449,747	242,250	187,500
California	2,8 8.09	349.89	1,6 8.98	330	425	95	6,674	124,102,582	124,503,153	7,157,861	255,763,596	258,36 ,047	2,98 .48	22,831,218	14,412,8 3	8,418,395	5,6 8,575	3,4 6,890
Oregon	583.36	50.00	0	39	31	13	723	11,000,000	16,918,000	0	27,918,000	17,614,734	552.36	4,277,772	2,537,116	1,740,6 6	331,140	315,992
Washington Territory	274.00	20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific States	5,876.84	633.89	1,781.98	420	473	118	8,320	172,652,582	168,517,653	7,157,861	348,328,096	340,19 ,902	3,813.54	38,736,660	17,950,554	10,786,1 6	6,372,305	3,992,762

RECAPITULATION BY GROUPS OF STATES.

New England	5,959.70	2,100.31	2,678.98	1,893	2,032	649	31,721	187,895,522	113,526,340	13,950,127	314,871,989	312,121,6 3	6,071.14	48,755,6 9	31,561,924	17,193,685	5,346,369	7,999,191
Middle States	15,335.39	10,119.21	8,665.95	6,097	5,091	1,617	252,257	780,968,618	724,220,863	53,501,738	1,558,691,219	1,242,155,044	14,881.69	199,0 3,718	115,080,322	83,923,393	38,666,290	28,479,891
Southern States	15,912.31	1,200.14	3,526.63	1,839	1,199	518	29,104	226,220,518	260,9 9,855	17,381,957	5 4,512,330	468,940,551	13,548.56	48,317,754	30,193,720	18,124,034	8,0 6,591	3,525,977
Western States	50,585.29	7,924.05	17,026.12	7,895	3,994	1,884	217,947	1,186,496,937	1,124,843,109	70,498,226	2,381,838,272	2,290,201,197	45,910.51	290,588,190	165,421,972	125, 6,218	49,474,773	33,117,590
Pacific States	5,876.84	633.89	1,781.98	420	473	118	8,320	172,652,582	168,517,653	7,157,861	348,328,096	340,19 ,902	3,813.54	38,736,660	17,950,554	10,786,1 6	6,372,305	3,992,762
Total United States	93,669.50	21,977.69	33,679.66	17,949	12,789	4,786	339,355	2,553,734,177	2,392,017,820	162,489,909	5,108,241,906	4,653,669,297	84,225.38	6.5,401,931	369,208,495	255,193,436	107,8 6,328	7,115,411

The Railroads of the United States in 1880.

[The following summary of the statistics in the new issue of Poor's "Manual of the Railroads of the United States," which appears this week, we copy from advance sheets of the introduction.]

Summary of the mileage, financial condition and of the operations of the railroads of the United States for 1880.

The total number of miles of the railroads of the United States in operation at the close of the year was 93,671.

* * * * * * * * * * *

During the year, various consolidations of railroads were made in the Southern states, in consequence of which earnings to the amount of not less than $2,000,000 were not reported, in addition to a very large amount of earnings by companies whose officers refused information. The total earnings of all the railroads, 16,000 miles, of the Southern states, equaled, probably, $52,000,000.

Included in the statement of earnings of the railroads of the Western states is that of the Union Pacific, which last year was reported under the head of the "Pacific Railroads." By the recent consolidations of the Union Pacific with the Kansas & Denver Pacific, the whole system properly belongs to the Western states. The new company, in addition to its consolidated lines, owns some 2,000 miles of railroad, the earnings of only 619 miles of which are reported. It is probable that the earnings of the lines not reported equaled $4,000,000.

* * * * * * * * * * *

Statement of miles operated, gross and net earnings, freight and passenger earnings, and dividends of the railroads of the United States for eight years, 1873-1880, arranged by geographical divisions:

	1880.	1879.	1878.	1877.
NEW ENGLAND.				
Miles of RR	6,071	6,156	5,760	6,036
Earnings:	$	$	$	$
Passenger	19,319,883	17,522,682	17,967,766	20,065,709
Freight, etc	29,435,7 6	23,807,143	23,292,437	24,524,756
All sources	48,755,609	41,329,825	41,260,203	44,590,465
Net	17,193,685	15,586,091	13,685,927	13,735,746
Dividends	7,999,191	7,236,205	7,566,655	6,977,726
MIDDLE STATES.				
Miles of RR	14,882	14,941	14,600	13,607
Earnings:	$	$	$	$
Passenger	44,967,011	43,195,638	35 953,207	39.255,780
Freight, etc	154,036,707	127,115,208	119,505,761	116,687,341
All sources	199,003,718	170,310,846	155,458,968	155,943,121
Net	83,923,393	70,416,970	61,559,993	61,033,089
Dividends	28,479,891	23,911,164	21,148,442	24,890,480
SOUTH'N STATES.				
Miles of RR	13,548	13,389	12,408	11,272
Earnings:	$	$	$	$
Passenger	10,448,572	11,321,478	11,221.014	9,953,090
Freight, etc	37,869,182	32,595,806	31,576,270	29,879,268
All sources	48,317,754	43,917,284	42,797,284	39,812,358
Net	18,124,034	14,673,357	14,379,958	12,664,346
Dividends	3,525,977	2,131,770	2,805,799	2,740,793
W. & S. W. ST'S.				
Miles of RR	45,911	44,104	41,605	39,136
Earnings:	$	$	$	$
Passenger	64,098,098	54,448,711	48,995,480	44,437,039
Freight, etc	226,490,002	177,930,875	160,856,795	148,767,477
All sources	290,588,190	232,379,646	209,852 475	193,204,516
Net	125,166,218	98,961,903	77,958,229	66,085,243
Dividends	33 117,590	23,561,262	19,341,222	14,556,462
PACIFIC STATES.				
Miles of RR	3,813	3,633	3,617	3,109
Earnings:	$	$	$	$
Passenger	8,819,349	8,862,030	8,529,281	7,803,949
Freight, etc	19, 17,311	18,082,176	17,354,726	16,558,900
All sources	28,736,660	26,444,206	26,881,007	24,652,849
Net	10,786,106	9,973,195	12,967,863	11,319,427
Dividends	3,992,762	1,628,265	....	4,582,130

	1876.	1875.	1874.	1873.
NEW ENGLAND.				
Miles of RR	5,783	5,732	5,617	5,303
Earnings:	$	$	$	$
Passenger	20,516,215	21,776,893	22,111,787	22,358,645
Freight, etc	25 244,778	26,552,029	27,952,987	29,310,043
All sources	45,760,993	48,328,922	50,064,774	51,676,688
Net	15,379,072	15,324,654	16,713,183	15,081,777
Dividends	7,607,973	8,788,040	8,511,971	9,004,488
MIDDLE STATES.				
Miles of RR	13,647	13,173	12,874	12,441
Earnings:	$	$	$	$
Passenger	47,483,865	40,772,967	41,899,871	42,355,230
Freight, etc	130,129,542	134,904,451	144,798,567	151,697,072
All sources	177,613,407	175,677,418	186,498,438	194,052,302
Net	69,382,517	65,609,418	90,188,972	69,280 585
Dividends	33,690,111	39,357,196	37,600,154	36,631,343
SOUTH'N STATES.				
Miles of RR	13,948	13,522	13,505	13,908
Earnings:	$	$	$	$
Passenger	11,877,901	13,864,915	14,131,291	15,310,989
Freight, etc	38,865,747	36,534,312	38,127,950	38,385,420
All sources	50,743,648	50,399,227	52,259 241	53,696,409
Net	17,119,031	16,741,060	17,269,332	18,133,349
Dividends	1,860,351	1,496,906	1068,455	901,306
W. & S. W. ST'S.				
Miles of RR	36,753	36,058	35,639	32,973
Earnings:	$	$	$	$
Passenger	43,362,211	54,993,0 4	56,783,466	51,620,779
Freight, etc	142,880,621	151,224,570	158,086,011	160,097,002
All sources	189,242,832	206,217,654	214,869,477	211,717,781
Net	63,912,968	75,604,104	75,546,695	72,464 212
Dividends	17,394,532	19,230,511	16,605,832	19,055,247
PACIFIC STATES.				
Miles of RR	1,807	1,790	1,639	1,612
Earnings:	$	$	$	$
Passenger	7,636,733	6,697,412	6,272,666	5,593,960
Freight, etc	16,374,527	15,744,822	10,478,961	9,682,787
All sources	24,011,260	22,442,234	16,774,086	15,276 747
Net	11,746,194	12,227,202	9,852,776	8,858,639
Dividends	4,529,741	5,427,535	3,256,130	1,628,265

Statement showing the number of miles of railroad constructed and in operation each year in the United States from 1830 to the close of 1880 inclusive.

Year.	Miles in operation.	Annual increase of mileage.	Year.	Mills in operation.	Annual increase of mileage.
1830	23	...	1856	22,016	3,647
1831	95	72	1857	24,503	2,647
1832	229	134	1858	26,968	2,465
1833	380	151	1859	28,789	1,821
1834	633	253	1860	30,635	1,846
1835	1,098	465	1861	31,286	651
1836	1,273	175	1862	32,120	834
1837	1,497	224	1863	33,170	1,050
1838	1,913	416	1864	33,908	738
1839	2,302	389	1865	35,085	1,177
1840	2,818	516	1866	36,801	1,742
1841	3,585	717	1867	39,250	2,449
1842	4,026	491	1868	42,229	2,979
1843	4,185	159	1869	46,844	4,615
1844	4,377	192	1870	52,914	6,070
1845	4,633	256	1871	60,283	7,379
1846	4,930	297	1872	66,171	5,878
1847	5,508	668	1873	70,278	4,107
1848	5,996	398	1874	72,383	2,105
1849	7,365	1,369	1875	74,096	1,712
1850	9,021	1,656	1876	76,808	2,712
1851	10,982	1,961	1877	79,089	2,281
1852	12,908	1,926	1878	81,776	2,687
1853	15,360	2,452	1879	86,497	4,721
1854	16,720	1,360	1880	93,671	7,174
1855	18,374	1,654			

Statement of miles operated, of lines whose earnings are reported, their capital stock and funded debt, gross earnings, net earnings, freight earnings, passenger earnings, and dividends paid for ten years:

Year.	Miles operated.	Capital and funded debt.	Gross earnings.	Net earnings.
1880	84,225	$4,897,401,997	$615,401,931	$255,193,436
1879	82,223	4,762,506,010	529,012,999	219,916,724
1878	78,960	4,586,948,793	490,103,351	187,575,167
1877	74,112	4,568,597,248	472,909,272	170,976,097
1876	73,508	4,468,591,935	497,257,959	180,452,752
1875	71,759	4,415,631,630	503,065,505	185,506,438
1874	69,273	4,221,763,594	520,466,016	189,570,958
1873	66,237	3,784,543 034	528,419,935	183,810,562
1872	57,323	3,159,423,057	465,241,055	165,754 373
1871	44,614	2,664,627,645	463,329,208	141,746,404

Year.	Freight earnings.	Passenger earnings.	Dividends paid.
1880	$467,748,928	$147,653,003	$77,115,411
1879	386,676,108	142,336,191	61,681,470
1878	365,466,061	124,637,290	53,629,368
1877	347,704,548	125,204,724	58,556,312
1876	361,137,576	136,120,583	68,0 9,668
1875	363,960,234	139,165,271	74,294,208
1874	379,466,935	140,999,081	67,042,942
1873	389,035,508	137,384,427	67,120,709
1872	340,931,785	132,369,270	64,418,157
1871	294,430,322	108,898,886	56,456,681

THE SCRAP HEAP.

Big Car Loads.

We are requested to state, in reference to the contribution under this heading which appeared last week (page 381) that the weight carried in one of the New England Car Co.'s dump cars was not only carried, but the car successfully dumped by one man. The car in question is in daily service on a gravel train, carrying 25 tons of gravel at a load.

Selling the Controlling Interest in Sahara.

"I have a plan to turn the great Sahara Desert into a smiling landscape, full of hills, valleys, glades and dells," he said, as he entered a Griswold street tobacco store yesterday.

"Yum," was the reply from the man who was sorting over pipe stems.

"The cost will only be $50,000,000. I shall issue 10,000,000 shares at $5 per share. Every shareholder will be entitled to a ten-acre lot and a share in the profits of sales. Will you take two shares?"

"No, sir."

"One?"

"No, sir."

"Will you give me half a pound of fine cut for a share?"

"No, sir."

"Don't you want to see the desert smile?"

"No, sir."

"And you refuse a ranch in some green valley in reclaimed Sahara?"

"I do."

"Very well, sir—very well. It is such men as you, sir, who obstruct—but hold on. Gimme ten cents' worth of poor plug and take the whole desert off my hands and let me go ahead with my tunnel from Portland to San Francisco. Eh? What do you say? It's the last chance you'll have this summer to buy a country of your own. Eh? Thanks; Sahara is yours. Go ahead with the smiling process."—*Detroit Free Press.*

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

UNITED STATES RAILROADS IN 1880.

Advance sheets of the introduction to that indispensable annual, the "Manual of the Railroads of the United States," of Messrs. H. V. & H. W. Poor, enable us once more to make a review of the entire railroad system of the United States. Statistics of the mileage, equipment, capital, earnings, expenses, interest and dividends, etc., of it are collected here, and here alone, making it the only source of information as to these facts for the country at large, while the articles on the separate roads give the summaries of several annual reports for a series of years, which are the most valuable aid in investigating the companies, or groups of them, as daily and almost hourly use of them for many years enables us to testify. The more important parts of the statistical summary we publish elsewhere, and on them are based the analyses and comparisons of this article.

The yearly additions of mileage reported by the Manual are such as are reported to it by the several companies, and frequently, perhaps generally, do not include roads not opened for traffic, though track may be laid upon them. Consequently they do not agree with our yearly record of new railroad construction, which includes all new roads on which track was laid during the year, of which, at the end of December, there are frequently some hundreds of miles on which regular trains are not run, or on which trains are run by the contractors and not by the companies. For 1880 and 1879, however, Poor's figures agree very nearly with ours, and the *aggregate* additions for the nine years that we have compiled records of new railroad construction are very close indeed—33,377 miles by Poor, and 34,210 by our records—an average variation of 93 miles a year, nearly the whole of which, we believe, is due to the failure to report to the Manual road built in 1872. The Manual makes a total of 93,671 miles of railroad in the United States at the beginning of this year, which is, doubtless, very nearly correct.

The most interesting of the figures in the introduction, however, are those regarding equipment, stock, debts, cost, earnings, expenses, profits, dividends, etc., making a sort of annual report for the national railroad system. These figures, of course, can be given only for the railroads that report to the Manual, or in some other accessible form, and they cannot be given for most of the mileage constructed during the year, and not for some old roads. Actually, the Manual's figures are given for 84,225 miles of road, which is 2.272 miles less than was in operation at the beginning of the year 1880.

Further, the "year" covered by the Manual is a very elastic one. The figures given are those of the last annual report, which in a few cases in this year's Manual may be for 1879 instead of 1880; for many will be for the years ending with June and September, with which most of the state reports close, and for some important roads is for a year ending in the first half of 1879, as the Chicago & Northwestern, ending with May, and usually the Chicago, Rock Island & Pacific, ending with March. It must be understood that the aggregate statistics are for the last *fiscal* year reported, and that many more of the roads report to the end of June or September than for the calendar year.

Bearing this in mind, we will compare the reports of the national railroad system in 1879 and 1880:

Road and Equipment:	1880.	1879.	Increase.	P c.
Miles of road, total	93,671	86,497	7,174	8.3
" " reporting	84,225	84,715	(Dec.) 490	0.6
Miles of second tracks and sidings	21,978	20,041	1,937	9.7
Miles of steel track	33,680	.....	.....	...
No. of locomotives	17,949	17,084	865	5.1
No. of passengers cars	12,789	12,009	780	6.5
No. baggage, mail and ex. cars	4,786	4,519	267	6.0
No. freight cars	529,355	480,190	59,165	12.3

Curiously, though there had been an increase of 4,700 miles of road the previous year, which must have made a record as to capital, earnings, etc. in 1880, there was a slight decrease in the mileage reporting such statistics. The following statement in the introduction may explain: "During the year various consolidations were made in the Southern States, in consequence of which earnings to the amount of not less than $2,000,000 were not reported, in addition to a very large amount of earnings by companies whose officers refused information. The total earnings of all the railroads, 16,000 miles, of the Southern States equaled probably $52,000,000." (The earnings of those reporting were $48,317,754).

It is probable that the reports of equipment cover most of the roads not reporting earnings. The addition to the stock of locomotives may seem small, but most new locomotives go to replace worn-out old ones, and 5 per cent. increase is likely to be sufficient to stock an increase of 8⅓ per cent. of road, most new roads requiring but a light equipment. The great increase in freight cars is what was to be expected, and is chiefly for old roads, several of which added each some thousands to their stock in the last year. Dividing by the total mileage, for every 100 miles of road, there were:

	1880.	1879.
Locomotives	19.2	19.8
Passenger train cars	19.0	19.1
Freight cars	573.0	555.6
Accessory tracks	22.4	23.2

Showing an increase only in freight cars, which is what is to be expected when there is so large an increase of new road.

Capital and Cost:	1880.	1879.	Increase.	P. c.
Stock	$2,553,734,177	$2,479,965,945	$73,768,232	3.0
Funded debt	2,392,017,820	2,282,540,065	109,477,755	4.8
Other debt	162,489,909	156,881,052	5,608,857	3.6
Total capital	$5,108,241,906	$4,919,387,062	$188,854,844	3.8
Cost	4,653,609,297	4,416,510,847	237,098,450	5.4

The capital is given doubtless for the roads reporting earnings, etc., that is, for 84,225 miles in 1880 against 84,715 in 1879, and not including some of the roads reporting in 1879, whose place is made up with new roads. The increase, therefore, represents chiefly additions to the capital and cost of old road. Per mile of road reporting the figures were in the two years:

	1880.	1879.	Increase.	P. c.
Stock	$30,320	$29,274	$1,044	3.5
Funded debt	28,400	26,944	1,456	5.4
Other debt	1,920	1,852	78	4.1
Total capital	$60,650	$58,070	$2,580	4.5
Cost	55,252	52,134	3,118	6.0

There thus was an increase of 4½ per cent. in stock and debts, and of six per cent. in cost per mile. If all the new road had been included, there doubtless would have been a decrease in all these items per mile. In view of the very great improvements made on many roads during the year, the considerable increase in cost per mile was to be expected.

Earnings, expenses and profits:	1880.	1879.	Increase.	P. c.
Gross earnings:				
Freight, etc	$467,748,928	$386,676,108	$81,072,820	21.0
Passenger	147,653,003	142,336,191	5,316,812	3.7
Total	$615,401,931	$529,012,299	$86,389,632	16.3
Working expenses	360,208,495	309,995,575	51,112,920	16.5
Net earnings	$255,193,436	$219,016,724	$35,276,712	16.0
Interest on bonds	167,806,328	112,207,578	*4,371,100	3.9
Dividends	77,115,411	61,681,470	15,433,941	25.0

*Decrease.

The very large increase in freight earnings is accompanied by a very moderate increase in passenger earnings, while from 1878 to 1879 there was an increase of 14 per cent. in passenger earnings and of less than 6 per cent. in freight earnings, the aggregate increase being 8 per cent. then against 16¼ from 1879 to 1880. The increase in working expenses was nearly in the same proportion, 16½ per cent., and there was left the very large increase of 16 per cent. in net earnings, amounting to more than $35,000,000. From 1878 to 1879 the increase in net earnings had been 17¼ per cent., amounting to $32,000,000.

Though the funded debt is reported to be $110,000,000 greater in 1880, the interest paid on it is reported as more than $4,000,000 less, and the interest payments amount to but 4.1 per cent. on the total amount of bonds, against 4.91 per cent. the year before. This is partly accounted for by the substitution of income bonds for other bonds in a number of reorganized companies.

The increase in dividends paid is 25 per cent., amounting to more than fifteen millions, and the gross amount is the greatest ever divided by the railroads of the country, though but little more than in 1875. The dividends paid were equal to 3.02 per cent. on all the stock outstanding, against 2.49 in 1879 and 2.34 in 1878.

The above items per mile of road reporting are, for three years:

Earnings.	1880.	1879.	1878.
From freight	$5,554	$4,564	$4,647
" passengers	1,753	1,680	1,585
Total	$7,307	$6,244	$6,232
Expenses	4,277	3,670	3,847
Net earnings	3,030	2,610	2,385
Interest	1,2 0	1,881	1,812
Dividends	916	732	6[illegible]2

The percentage of increase in 1880 over 1879 is very nearly that given with the totals above, there being very little change in the mileage reporting. The average net earnings of $3,030 per mile of road reported for 1880 was sufficient to pay 7 per cent. on a capital of $43,300 per mile of road, 8 per cent. on $38,000, 9 per cent. on $33,700, or 10 per cent. on $30,300, all of which are very much lower figures than the average cost per mile in any country in the world.

The capital, gross earnings, expenses and net earnings per mile of road, and percentage of net earnings on capital of the railroads of the United States, for ten successive years, have been:

Year.	Stock and debt.	Gross earnings.	Expenses.	P. c. of ex. to earn.	Net earnings.	P. c. of earn. on capital.
1871	$59,726	$9,041	$5,863	64.8	$3,177	5.32
1872	55,116	8,116	5,224	64.4	2,892	5.25
1873	57,136	7,947	5,172	65.1	2,775	4.86
1874	60,944	7,513	4,776	63.6	2,737	4.49
1875	61,533	7,010	4,425	63.1	2,585	4.20
1876	60,791	6,764	4,228	62.5	2,536	4.16
1877	61,650	6,382	4,075	63.8	2,307	3.74
1878	59,040	6,232	3,847	61.7	2,385	4.04
1879	58,070	6,244	3,670	58.8	2,610	4.49
1880	60,650	7,307	4,277	58.5	3,030	5.00

Capital per mile has varied but little since 1874, at the close of the railroad construction period. Gross earnings per mile we see decreased continously from 1871 down to 1878, made very little gain from the lowest point in 1879, but in 1880 leaped up at once, becoming the largest for six years. Expenses made a similar leap, yet not so far but that net earnings per mile were the largest since 1871. So the percentage on the capital formed by the net earnings decreased continously from 1871 to 1877, and since 1877 has increased, and most of all last year, when it became just 5 per cent., which is as good an average return as most European countries exhibit; this has been exceeded only in 1871 and 1872.

Of the increase of gross earnings, $58,000,000 out of the total of $86,000,000, and of the increase of net earnings $26,000,000 of $35,000,000 is credited to the Western and Southwestern States, which, however, leave about 55 per cent. of the total mileage reporting. The Middle States, however, with 17¾ per cent. of the total mileage, had $23,000,000 (30 per cent.) of the increase of gross and $13,500,000 (38 per cent.) of the increase of net earnings. There is, however, a gain in all sections, indicating general prosperity.

THE WELLAND CANAL.

The August number of *Harper's Monthly* has an article by Frederic G. Mather, entitled "Water Routes from the Great Northwest," which is chiefly a very full and excellent description of the improved Welland Canal, with some discussion of the other Canadian canals, the Erie Canal, and various proposed schemes for improving the Erie Canal, followed by a chapter on "the practical effects of an enlarged Erie Canal, the new Welland Canal, and other land and water routes in solving the problem of cheap transportation." This last part seems to us very weak and inconsequent, and is certainly in some important respects inaccurate; but the description of the improved Welland Canal and what it is intended to be capable of doing is very good indeed, and will command the attention of carriers, many of whom

will be able to form estimates as to the probable effect of this great work much more accurate than those which the final chapter of the article gives.

The old Welland Canal opened a route from Chicago and Duluth to the foot of Lake Ontario for vessels drawing 8½ ft. of water and carrying 600 tons. In course of time vessels as small as this have become uneconomical for carrying grain, and are being replaced by very much larger ones, a few carrying 2,000 tons, and many 1,200 tons and more. The Welland Canal never obtained a very large share of the Northwestern freight bound to the sea-board. It has by some been supposed that the expectation was that vessels from the upper lakes passing through this canal would sail on not only down Lake Ontario and the St. Lawrence but across the Atlantic, avoiding the transfer of grain between Chicago and Liverpool. Probably, however, this was never expected by those who designed and executed the canal. A few vessels have sailed from Chicago to Europe direct, but in most cases these were vessels that sought a European market, and did not expect to return. In fact, not only do the vessels going through the canal not cross the Atlantic, but they do not even go down the St. Lawrence. By far the larger part of them transfer their cargoes at Kingston, at the foot of Lake Ontario, to barges which carry the grain to Montreal, whence it is again transferred to ocean vessels. The navigation of the St. Lawrence to Montreal is not possible, we believe, to the largest vessels that can pass the old Welland Canal, and at all events it is difficult and costly for them, and the carriage can be done as well by much cheaper craft built specially for the service. Thus there are actually as many transfers of grain shipped from Chicago to Europe *via* the Welland Canal and Montreal as of that going *via* the Erie Canal and New York.

Tranfers from one vessel to another, however, are very rapidly and cheaply made. The present price at Buffalo for this service is 1/6 cent a bushel, and it probably can be afforded at a regular rate of ¼ cent, and with advantage to the grain. For most other freights a transfer would be much more costly and disadvantageous.

Port Colborne, the Lake Erie entrance of the Welland Canal, is substantially the same distance as Buffalo from Western lake ports. The other two steps of the export grain, to tide-water at New York or Montreal, and thence across the Atlantic, remain to be compared with each other. It is commonly affirmed that Montreal is as favorable a port as New York to ship from. This, however, we believe is not true. Montreal is considerably nearer than New York to Liverpool, but some hundreds of miles of the distance are by river, not by sea, which for sailing vessels at least is costlier navigation, and the navigation of the Gulf of St. Lawrence is more dangerous than any part of the route from New York. Further, this route is closed by ice for nearly one half of the year, and whatever shipping plies between Montreal and Europe in summer must sail from some other American port in the winter. Much of the time, doubtless, rates on grain from Montreal are no higher than those from New York, but this is probably because vessels arriving at Montreal cannot get any more, and probably at equal rates very few vessels engaged solely in the grain trade would choose to go to Montreal for cargoes. The difference for some months in the year, however, is not likely to be very great; and nothing prevents a vessel's taking cargoes from Montreal in summer and from Boston, Baltimore and New Orleans in winter.

There remain the intermediate sections from Buffalo to New York, and from Port Colborne to Montreal, and it is on these that the contest is made. From Buffalo to New York is 502 miles, 352 of which is canal, passing 200-ton boats. From Port Colborne to Montreal is 365½ miles, only 71 of which is canal, while 155 is by lake, and the rest by river—much less favorable river navigation than the Hudson, however. Were Montreal fully as favorable a shipping port as New York, it would seem to gain its desired advantage simply by making the Welland Canal and the St. Lawrence as favorable as the Erie Canal, the distance from Port Colborne to Montreal being very little greater than that Buffalo to Albany. But the Canadian route has had this fatal disadvantage, that because of its passing only very small lake vessels it has increased materially the whole cost of lake transportation. It cost much more to carry to Port Colborne than to Buffalo, because only 600-ton vessels could enter the canal at Port Colborne, while 1,500-ton vessels carried cargoes to Buffalo, and this increase of the cost on the 850 miles of lake above Port Colborne has counterbalanced whatever advantage there may have been on the 365 miles of canal, lake and river below that place over the Erie Canal and Hudson River route. If the transfer had been at Port Colborne, and the vessels could have gone thence economically through to Montreal, instead of transferring again at Kingston, then the lake part of the route would have been as good for Port Colborne as for Buffalo.

The improvement of the Welland Canal, a portion of which was to be opened this month, will more than do this. It will permit large lake vessels, drawing 14 feet of water and carrying 1,200 tons, to pass directly from Chicago, Milwaukee, Duluth and Toledo to the point of transfer at the foot of Lake Ontario, within about 180 miles of Montreal; which is almost as if these lake vessels could sail through to Troy, and a difficult stream of rapids and canals were substituted for the magnificent Hudson. The enlarged Welland Canal will not pass the largest of the vessels that have been built on the lakes recently, but by far the greater part of the vessels engaged in the lake traffic can pass its locks. It is but 27¼ miles long, but has 24 locks, lifting 330 feet, the passage of which, of course, consumes considerable time; but, with this interruption, the Canadian route, as far east as Kingston, is continuous cheap lake navigation, which is thus extended to within 180 miles of tide-water.

The improvement of the St. Lawrence canal forms a part of the plan, but this will not be completed for some years; and, meanwhile, we are to see what will be the effect of admitting large lake vessels as far east as Kingston. Last year the rate from Chicago to Kingston was from 2½ to 4½ cents a bushel higher than to Buffalo—from 40 to 90 per cent. higher, the difference being equal to half or three-quarters of the freight on the Erie Canal. If this difference is materially reduced by the enlargement of the canal, there will be good reason for believing that the route will be a great success as soon as the St. Lawrence improvement is completed. Unless the passage of the canal is more costly in time or money than there appears any reason for it to be, it ought to be a decided success now; though it probably will not be much felt in cheapening transportation, because there is now but a limited stock of the boats that navigate the St. Lawrence insufficient to take any great increase of traffic; while as the St. Lawrence canals are soon to be made to pass much larger craft, there will be unwillingness to build new vessels small enough for the present channel, which can only be used two or three years. The improvement of the Welland Canal will not be completed until next year, but a part of it is already available, and it was announced that it would be opened for vessels drawing 12 ft. of water this month. (We have not heard that it *has been* opened, however). Portions of the old canal of sufficient capacity in connection with the completed parts of the new one permit this to be done. The result of its opening will be watched with great interest by all engaged in the grain-carrying trade, but especially by the boatmen on the Erie Canal (who are most threatened by it), and by the railroads. Unless the disadvantage of the Montreal-Liverpool section of the route is very considerable, it seems probable that this will be decidedly cheaper than the Erie Canal route, though the latter at present is very cheap indeed—to the canal boats doubtless unprofitably so. The distance from Montreal to Chicago is but 1,261 miles, 1,005 miles of which are lake. From Chicago to New York the distance is 1,419 miles, only 865 of which are lake. Though the barges that ply between Kingston and Montreal are small, they are still twice as large as Erie Canal boats, and ought to make much better time. This route seems to us much more likely than the Mississippi route to make an important diversion of the grain traffic. It is the shortest and most direct of all the routes. To Liverpool from New Orleans is one-half further than from New York; but from Montreal the distance is less than from New York. Both routes, however, may prosper at once, the river taking grain from the more southern district, distant from the lakes, and the lakes (whether to Montreal or New York) from the more northern district, which can reach the lakes as easily as the river. The lake route, moreover, is utilized for supplying the demand for consumption in the Eastern and Middle States, which has usually been more than the exports. This traffic is what the railroads get most of. This demand, for New England, could be supplied by the St. Lawrence route: but it would have to be very cheap to do it. If so supplied the distribution would probably be made from Oswego and Ogdensburg as much as from Montreal and perhaps more.

REDUCED CROPS AND THE EFFECT ON RAILROAD EARNINGS.

There continues to be the most extraordinary interest in the condition of the crops, and the extent to which the reports are colored by the desire to bear or bull the market, both for grain and railroad securities, is painfully manifest in most of the published discussions of the subject, and, we imagine, in many of the reports themselves. The most trustworthy reports are tortured to support opposite conclusions, and there is the most shameful falsehood practiced on both sides. Until very recently the bulls insisted, in the face of the almost uniform reports of official statistics, that the crops of the country of all kinds would be larger than ever before; while the bears have greatly exaggerated the amount of damage where there has been damage to crops, and multiplied over and over again the results to business and especially to railroads of a smaller grain crop. The bulls have had a good deal to say about a "syndicate of liars" engaged in making all sorts of injurious reports; but, in fact, there are two syndicates of liars, one of bears and one of bulls, and which has done and is doing the most and the most outrageous lying, it would be hard to say.

But besides the efforts knowingly made to falsify the actual situation, there are some discussions, based on facts, perhaps conscientiously collected and quite accurate, which err egregiously by exaggerating the effect of an increase or decrease in production. A recent number of the Chicago *Tribune* has discussed the effects of a short grain crop, in which it says that there is likely to be a decrease of 200,000,000 bushels in grain production this year, and that all this will be taken from the exports. The quantity is a large one certainly, but everything is comparative, and a reduction of 200,000,000 bushels in the grain production of the United States is comparatively not a very great matter. If we heard that a farmer who produced 2,434 bushels of grain last year was likely to produce but 2,234 this, we should not think him likely to suffer or to be embarrassed at all. We should expect him to be prepared for fluctuations much greater than that. Now, this is precisely the proportion of a decrease of 200,000,000 from the aggregate grain crop of the United States in 1880. It will not hurt the country a particle more than the decrease from 2,434 to 2,234 would hurt the individual farmer. It will not hurt it so much, because grain-growing is only one of a vast number of national industries; while when produced on the scale named it is usually the chief industry of the individual farmer.

We are not at all sure that the entire decrease of grain production will be taken from the exports. Let us consult the experience of the country. The total production of grain and the exports of flour and grain from the United States for six successive years have been in bushels:

	Production.	Exports.
1875	2,092,153,230	102,449,466
1876	1,953,153,300	147,290,426
1877	2,168,757,046	144,887,204
1878	2,290,004,130	234,841,745
1879	2,424,340,400	270,620,597
1880	2,434,383,811	298,436,661

Hence we see that from 1875 to 1876 there was a decrease of 69,000,000 bushels in the production, but an increase of 45,000,000 in the exports. On the other hand from 1876 to 1877 there was an increase of 215,000,000 bushels in the production, and a *decrease* of 1,500,000 in the exports. A decrease of 200,000,000 in the production would leave us 2,214,000,000 bushels; and with a production little greater than that we exported 235,000,000 bushels in 1878, or but 64,000,000 bushels less than last year. Considering the fact that our exports have never been one-eighth of our production, it is astonishing to assume that the whole of the decrease in production will be taken from the exports.

Further, the Chicago *Tribune* says that a shortage of 200,000,000 bushels of grain means a loss of 6,000,000 tons of freight and of $24,000,000 of earnings to the railroads. In the first place it is only the heaviest of the grains that weigh 6,000,000 tons to 200,000,000 bushels; one of the chief weighs but 3,200,000 tons to that number of bushels. But, again, the railroads do not carry all the grain. About 19,000,000 bushels last year went down the Mississippi; probably 130,000,000 bushels were shipped by lake, and 71,000,000 of this came to tide-water by the Erie Canal and some other millions down the St. Lawrence, the total receipts of the Atlantic ports being 370,000,000 bushels. Now the whole of the decrease is not going to come from the railroads. Lake, canal and river will suffer also.

Most of the grain carried by the water routes is brought to the water by rail, it is true, but a great deal of it is carried but a short distance.

The fact is, a decrease of 200,000,000 bushels in the grain crop of this vast country, if pretty evenly distributed—not all in a few states—would hardly be felt in time of prosperity. It is equivalent to but four bushels per inhabitant, and to but about 8 per cent. of the last year's grain crop. The country which cannot bear a reduction of 8 per cent. in its leading crops, especially when that reduction is from the largest ever

known, without a collapse of railroad securities and financial troubles, is in a bad way. If it were a decrease from a very poor crop and after a period of industrial paralysis, it would doubtless be truly a disaster—the last strain on the camel's back. If, for instance, the crop of 1877 had been much smaller than that of 1876, we should certainly have had very serious trouble in this country. There was a light crop in 1876, following years of bad business. The depression of the transportation interests following that poor harvest—that is, during the twelve months ending about Aug. 1, 1877—reached its lowest point; and with another year like it, not to say worse, a goodly number of railroad companies whose stocks now sell at par or thereabouts would have become bankrupt, in addition to the large number already in that condition. But a fine crop in 1877, together with a heavy foreign demand and good prices, put the country on its feet again.

It is, however, desirable to remember that for four successive years, beginning with 1877 and ending with 1880, taking the country as a whole, we have had extraordinarily good crops, and that this will not continue forever, nor will the exceptionally rapid progress which has been stimulated by this succession of good harvests. Calculations based on the supposition that the progress of recent years can be safely counted on for an indefinite future are sure to be disaprointed. But no rational estimate of the value of a railroad or other productive industry is based upon any one year's results, and least of all upon the results of an exceptionally favorable or unfavorable year. That the Lake Shore earned 11.28 per cent. on its stock in 1880 was not sufficient reason for concluding that it would earn that ever after; but it was just as much so as to conclude, in 1878, that the stock would never pay more than 4 per cent., which was the dividend for that year.

But even if dividends are limited by an unfavorable year, if the cause is clearly a temporary one, the price of the stock should not be affected by more than the amount of the decrease in the dividend. If the situation justifies confidence in an average dividend of 6 per cent., and thereupon the stock is valued at 100; then if a crop below the average reduces the dividend one year to 5 per cent., at the beginning of the year the stock should be worth 99 and at the end 100 again. But this, we know, is not what happens on the stock exchanges. Losses and gains are capitalized at once, though they may be temporary and well known to be temporary. Drop 2 per cent. from the dividend on a stock that has previously paid 8, and it is likely to fall 10 or 20 per cent., *if it is a stock in which there is much speculation*. Stocks held almost entirely by investors are not nearly so sensitive. For example, the Pennsylvania before the railroad war was quoted at about 133 (for two $50 shares), while Lake Shore was about 133 also. As we write Lake Shore is about 121, and Pennsylvania 129. Yet Pennsylvania Railroad shareholders will probably lose much more than those of any other road by the low rates, because they have the profits (and the losses) of a vast system of railroads which they lease at fixed rentals. There is some speculation in Pennsylvania, but not nearly so much as in Lake Shore. The owners, most of them, expect to hold it through good years and bad years, and estimate it on the basis of what they think will be the average return.

But a man who has bought a hundred shares on a margin has not the slightest interest in the road's profits next year; what he wants is a good showing for this year which will advance the price within the next month.

We are not going to be hurt much by the smaller crops of this year, even if the decrease shall be 200,000,000 bushels, of which there is no evidence yet. In the four principal winter-wheat states a probable decrease of 63,000,000 bushels is reported, against which we have an increase of perhaps ten millions in Kansas. In Iowa a reduction of 17,000,000 in the spring wheat crop is predicted, but the prospect is at least fair that Minnesota and Dakota will make a considerable gain over their quite moderate production last year, and Nebraska will have perhaps 10,000,000 bushels more: a good deal will depend on the harvest weather. Corn is not in so good a condition as at this time last year. But there is plenty of time for it yet; and last year, though the promise was never better in July, the crop was not of the best, and a very considerable portion of that which matured was spoiled by unfavorable picking weather. Of course there is also plenty of time for the corn crop to be ruined; but it is the safest of all our grain crops.

A reduction in the price of grain may have more effect than any probable decrease in production this year. And it seems quite probable that there will be lower prices for wheat, in spite of the smaller American production, because of a very much larger production in Europe than has been had for two or three years. Low prices will compel low rates on many of the railroads. But if wheat is cheap abroad and our corn crop is less than the average, corn will almost surely be higher. The European workman buys more meat when his bread is cheap, and the meat he buys is chiefly American bacon, which is made of American corn. A few cents a bushel on the enormous corn crop will make up for any probable losses on wheat.

The fact is, there is nothing alarming in the agricultural situation. There is likely to be a smaller crop than the extraordinary ones of 1880 and 1879, but it will not necessarily cause any serious loss.

Northern Pacific Through Traffic Prospects.

Mr. Henry Villard, who is now the virtual head of both the Northern Pacific and the Oregon Railway & Navigation Company, last week made a speech to the business men of St. Paul on the plans and prospects of the Northern Pacific, in which he prophesied enormous earnings from the through traffic of the road as soon as it is completed, and named $5,000,000 as the earnings that would be contributed by the railroads in Oregon and Washington that will find an outlet over the Northern Pacific as soon as it is completed. Mr. Villard based this estimate largely on the traffic now carried from the Columbia River to San Francisco by the Oregon Railway & Navigation Company, amounting last year to 170,000 tons, 110,000 tons of which were wheat. All this traffic, he said, would go to the Northern Pacific when it was completed.

This seems to us an astonishing statement, in view of the experience of California and the Central Pacific Railroad. California last year produced nearly 46,000,000 bushels of wheat, and it has, ever since the Pacific Railroad was completed, produced millions of bushels for export yearly; yet it is very nearly true to say that not one bushel of these vast exports, amounting in the last crop year to more than 20,000,000 bushels (while a surplus of an equal amount was left in California to be marketed this crop year) went across the continent by rail. Yet nearly all the California wheat is produced upon the lines of the Central Pacific Railroad, and is carried to San Francisco by them; and we may be sure that if this company could make a cent a bushel more by carrying the wheat across the continent the full length of its line it would do so. But, as it would have to be carried 3,200 miles or more to reach Atlantic markets, a rate of ¾ per cent. per ton per mile, which is much less than the average expense on the Pacific railroads, it would amount to 72 cents a bushel; and even in this year of exceptionally high ocean freights from San Francisco, the wheat is carried thence to Liverpool for about 48 cents a bushel, and in most years the cost has not been more than 32 cents. Even with the present low ocean rate from New York, the railroads probably could not get the California wheat to carry across the continent at a rate higher than about 40 cents a bushel from Sacramento to New York, which is about 0.416 cent per ton per mile.

It is true that it would not be necessary to carry the wheat by rail further east than the lakes, and it is also true that a large part of the Oregon and Washington wheat, which will hereafter doubtless be the largest part of it, is produced at some distance east of the Pacific. From Ainsworth, the point where connection is made with the Oregon Railway & Navigation Company's systems, to Duluth is about 1,680 miles, to Chicago 2,100 miles, and to New York by rail 3,000 miles. Hitherto a large part if not most of the grain carried by the road has not been marketed at Duluth, but by way of St. Paul and the Lake Michigan cities. But granting that Duluth is equivalent to Chicago as a market, a haul thither by rail of nearly 1,700 miles will form a tremendous tax on the wheat-growers, and put them at very great disadvantage when compared with those of the Red River valley, not 250 miles from Duluth, or even those of Kansas and Nebraska, 500 to 800 miles from Chicago, and if the railroad carries the wheat over the Rocky Mountains in this direction, it must do it at such rates as will, probably, leave it no profit. At least it will have to be a very different tariff from that which the Oregon Navigation Company now collects—24 cents a bushel for the 270 miles from Walla Walla to Portland, or about 3 cents per ton per mile. One cent per ton per mile would make the charge more than 50 cents a bushel, and the road can hardly afford to carry for less than that, except to get loads for cars that go West loaded, and otherwise would have to return empty.

It is a great error to count upon a heavy through freight to support any trans-continental railroad, and there is no reason why any one should be deceived about it. The Central Pacific, which hitherto has had to carry the whole of the Oregon as well as the California and the trans-Pacific traffic, has reported its through traffic yearly, and the items of which it was composed. In the year 1879 (the last reported) it amounted to 219,684 tons in both directions, and also including the Utah traffic, which is through to this road, though not transcontinental. Now the population of California in 1880 was 865,000, against 250,000 in Oregon and Washington together, and its production of wheat was 45,750,000 bushels in 1880, against 17,000,000 in Oregon and Washington. The Central Pacific also reports its earnings from through freight separately; in 1879 they amounted to about $2,650,000, the line being about half as long as the Northern Pacific. If $5,300,000 only is earned when all the transcontinental traffic is carried by one line, how can the Northern Pacific get $5,000,000 out of it when it is divided among three or four?

It is one of the commonest of errors to exaggerate the amount and still more the profitableness of the through traffic of very long railroad lines. There are comparatively few freights that can afford to pay railroad transportation 2,000 or 3,000 miles. With a community of ten of twenty millions at each end of the line, the consumption of these valuable freights will be large enough to make a large traffic at remunerative rates; but with a quarter of a million or even one, two or three millions at one end—especially if they can be reached by sea—a very heavy through traffic over so long a line is very improbable.

Lines across the continent, like most other lines, have to draw their chief support from their local traffic, and especially will this be true of the Northern Pacific, which has a very small population at present at its western end. If wheat cannot be carried from the Columbia River to the Atlantic at a profit, the experience of the Navigation Company has proved that a very handsome profit can be made by carrying it to the Pacific; and although the proportion of agricultural land to the total area on this and all the other trans-continental roads is much less than on this side of the Missouri, they have the vast advantage of forming the sole available outlet for a great distance on each side of them—frequently hundreds of miles—while further east a competitor is usually met within ten or fifteen miles, and often within five. Certain districts are capable of large production per square mile, but in these railroads will multiply so fast that it is doubtful whether much more profit will be drawn from them than from very thinly peopled grazing and mining districts, where for every mile of its length the railroad may drain the traffic of 200 square miles of country. In the latter districts it may take some time for the traffic to grow, but it will usually bear very remunerative rates, which grain that has to go 1,000 to 4,000 miles to market usually will not bear.

The Railroad War.

Railroad wars would be the better title, for there are some four independent struggles going on, if struggles they can be called, in which, so far as appears, nobody is fighting for anything, but money is thrown away for the sake of reducing profits.

Public attention is most occupied by the cutting of passenger rates from New York and Boston to Western cities, which has gone to that extent that the companies sell limited tickets from New York to Chicago for $10, the regular rate being $20; to Cincinnati for $10, and to St. Louis for $15.25 (regular rate $24.25), while the scalpers, who, on this occasion, are dealing in Erie and Baltimore & Ohio tickets, we believe, go a dollar better. So far as we can learn, this is only an aggravation of a chronic trouble. Owing to the small difference between the Boston and New York rates to the West, New York is always full of unused coupons obtainable at a considerable discount. Ordinarily, however, only a small part of the travelers get a reduction and then only about three dollars on a Chicago ticket; now everybody nearly gets cut tickets and the rebate is three times as large.

There was an attempt some time ago to solve the problem by making the rate from Boston to Chicago $25.75 by way of New York, while only $21 by way of Albany, and these are the figures in the official rate sheet now. This virtually shuts the Pennsylvania and the Baltimore & Ohio out of Boston, and it is not easy to see how they can consent to this, unless they are given something in return. To St. Louis, Cincinnati and many other places these roads form the short line from Boston. They have the inducement for giving up Boston business that if they sell coupon tickets as low as by way of Albany they will greatly damage their own

much larger New York business, as well as that of other roads. But they ought not to be made to pay the whole cost of maintaining New York rates. Rates from Boston have followed those from New York, that is, they are one dollar higher than the New York rates. We do not hear of disturbance at Philadelphia and Baltimore; but the people there will get supplies of New York tickets if nothing is done for them on the spot.

Something has been said of low rates in the other direction. Irregularities were common there before they were here, but they probably have now become general. We do not hear of rebates of more than five or six dollars from Chicago, leaving the rate much higher than in the other direction.

This is a season when usually through travel is light, and on that account probably the losses are less than at most other seasons, and very much less than if the present rates continue till September. Just now the trains are filled by people who do not need to travel, but wish to take advantage of the low rates; by and by there will be a large travel of people who would go just the same if the rates were $20 instead of $10.

There is absolutely no change in the east-bound freight. The rates from Chicago are given as 15 and 12½, and apparently but little is taken at the latter rate. Shipments are heavy, but lighter than they have been, and taking the aggregate of the east-bound through business, not more than about one-sixth greater than before the 15-cent rate was made. No attempt is made to make any advance, it being apparent that the desire for an advance is not universal: that is, some one for some reason deliberately prefers that rates should be kept unprofitable at this time. What this reason is no one seems to be able to guess.

As to west-bound rates, in which we noted recently that there had been some irregularity, there are no new developments. Matters are more nearly satisfactory in New York now, but there are complaints elsewhere.

Altogether, through business is in an exceedingly unsatisfactory condition to all who wish to make a profit out of it, and the more so because the indications are that one of the leading competitors prefers to have things as they are for the present.

June Accidents.

We present below the summary of the monthly record of train accidents which heretofore we have given at the foot of the record itself. The number of accidents has been much greater than in the corresponding month last year; but compared with the winter months of this year it is small indeed. The whole number recorded for June this year is 73, by which 31 persons were killed and 78 injured.

As compared with June, 1880, there was an increase of 17 accidents, of 16 in the number killed and of 1 in that of injured. An unusual number of freight trainmen are reported killed.

These accidents may be classed as to their nature and causes as follows:

COLLISIONS:	
Rear collisions	10
Butting collisions	10
	—20
DERAILMENTS:	
Broken rail	2
Broken rail-joint	1
Broken wheel	5
Broken axle	3
Broken bridge	1
Spreading of rails	2
Accidental obstruction	4
Cattle	3
Wash-outs	2
Land-slide	2
Wind	1
Misplaced switch	5
Purposely misplaced switch	1
Purposely broken bridge	1
Malicious obstruction	2
Unexplained	16
	—51
Cars burned while running	2
Total	73

Three collisions were caused by trains breaking in two; three by failure to given or obey orders correctly; two by misplaced switches; one by failure to use signals properly, and one by cars run out of a siding by mischievous or malicious boys.

Eleven of the accidents were due to defects or failures of rolling stock, and eight to defects or failures of permanent way. Seven can be traced to the action of the elements; six to accidental obstructions not easily foreseen or prevented; 22 were due to carelessness or defects in management; four were maliciously caused and 16 are unexplained.

The second quarter of the year compares with the corresponding quarter of 1880 as follows:

	Accidents.		Killed.		Injured.	
	'81.	'80.	'81.	'80.	'81.	'80.
April	63	71	22	11	66	45
May	85	46	24	30	76	107
June	73	56	31	15	78	77
Total	221	173	77	56	220	229

The increase is marked, though much less so than for the first quarter. As compared with the first quarter of 1881, the quarter just closed shows a decrease of of 264 accidents, 18 killed and 392 injured, showing well the marked contrast of seasons.

A division according to classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	..	16	1	17
To a pass. and a freight	5	..	..	5
To freight trains	15	35	1	51
Total	20	51	2	73
Casualties:				
Killed by	11	20	..	31
Injured by	21	57	..	78
Total	32	77	..	109

As to time there were 47 accidents in daylight, 25 in darkness, and in one case the time is not definitely given. The average for months has been nearly two-thirds of the accidents by daylight.

For the year ending with June the record is as follows:

	Number of accidents.	Killed.	Injured.
July	78	21	100
August	112	49	214
September	124	15	54
October	120	69	137
November	145	40	165
December	135	29	141
January	223	30	182
February	149	27	253
March	113	38	177
April	63	22	66
May	85	24	76
June	73	31	78
Totals	1,420	395	1,643
Total, same months, 1879-80	861	302	753
" " 1878-79	810	269	794

The averages per day were, for the month, 2.43 accidents, 1.03 killed and 2.60 injured; for the year, 3.89 accidents, 1.08 killed, and 4.50 injured.

The averages per month for the year were 118 accidents, 33 killed and 137 injured against similar averages of 72 accidents, 17 killed and 63 injured in 1879-80, and 68 accidents, 17 killed and 66 injured in 1878-79.

The average casualties per accident for June were 0.425 killed and 1.068 injured; for the year they were 0.278 killed and 1.157 injured.

Crop Prospects.

The Secretary of the State Agricultural Society of Iowa makes elaborate reports of the condition of the crops in July, indicating that the spring wheat has been greatly damaged during June, and its average condition reduced from 87 to 71 per cent. of an average crop, which would make the production 17,000,000 bushels less than last year. Winter wheat is shown to be in very poor condition, but the quantity grown in Iowa is insignificant. The corn crop is also reported damaged by wet weather in June, the condition being 77 per cent. of an average, and a decrease of 60,000,000 bushels from the crop of last year being estimated. Oats and hay are reported in good condition. The report seems unduly unfavorable, especially for corn. That crop is made chiefly in the months of July and August, and a poor condition on the 1st of July, if only the plants are alive, will not prevent a good crop, if the frost holds off long enough.

The United States Agricultural Department reports for July 1 an average condition of 95 for cotton, against 100 at the same time last year; an average of 83 for wheat, being an improvement over June 1. It reports an average condition of 64 for Michigan and 60 for Illinois, with a lower condition than last year (how much is not stated) in Ohio and Indiana. Great complaint of damage from insects is made in Missouri and Kansas, but the condition of the crop in those states, where the crop must have been partly harvested and generally mature July 1, is not given. For Iowa an average condition of 72 is reported, and this is said to be the only spring wheat state which reports a condition much lower than last year.

The acreage planted to corn is reported to be 2 per cent. greater than last year, which in view of the general extension of culture in the far western states and the considerable area of winter wheat ploughed up and planted to corn, and of land (as in Iowa) intended for spring wheat, which, on account of the lateness of the season, could not be got ready for sowing early, is less than we had expected. The average condition of this, the most important of our grain crops, is given at 90 on the 1st of July, against 100 last year. With favorable weather hereafter, however, corn may turn out a better yield than last year, when the most unfavorable picking season known (causing a great deal of corn to remain on the stalks until the snow went off in the spring) considerably reduced the product, especially of sound corn. In Iowa an average of only 77 is reported, and, next to Illinois, Iowa is the great corn state. In Illinois and Missouri the condition of corn was very favorable. Nebraska gives promise of most excellent crops, both of wheat and corn—one-half more than last year, it is said. Last year, however, on account of drought, the wheat production of Nebraska was unusually small, the average yield being only 9 bushels an acre. Twice that yield would not be surprising in that state, and as there is a large area sown an increase of 10,000,000 bushels there is at least possible. The Kansas wheat crop is all harvested, and the yield is good and the quality excellent. Definite information as to the amount raised is not had, but as the very bad yield of last year was estimated at 20,000,000 bushels, it would seem that this year's should be 30,000,000, which will be given by an average yield of less than 15 bushels per acre.

News from Minnesota and Dakota is surprisingly meagre. The critical point is now reached for the crop there, as a few days may make or ruin it. So far the news has generally been favorable, with some districts suffering from too much rain or insects, as is the case every year. A good deal has been said of the ruin caused by certain whirlwinds and overflowing streams. A great impression is always caused by such events, because the ruin which they cause is usually complete so far as they extend. But the area affected is such an infinitesimal fraction of the whole that their effect on the total crop of the state, not to say the country, is quite insignificant. A few days of ordinary unfavorable harvest weather may reduce the yield more than all the floods and tornados that ever afflicted Minnesota.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Cincinnati, Georgetown & Portsmouth.—Extended from Cleveland's eastward to Bethel, O., 6 miles. Gauge, 3 feet.

Chicago & West Michigan.—The track is laid on the *Manistee Extension* from White Cloud, Mich., north by west to State Road, 10 miles.

Mayville Extension.—Completed from Mayville, N. Y., to Fair Point, 3 miles.

Oxford & Henderson.—Track laid from Henderson, N. C., west 5 miles.

Philadelphia & Long Branch.—Extended eastward to and across Barnegat Bay, N. J., 7 miles.

Morgan's Louisiana & Texas.—The *North Branch* is extended from Washington, La., north to Garland, 16 miles.

Minneapolis & St. Louis.—The *Minnetonka Branch* is completed from Hopkins, Minn., northwest to Excelsior, 10 miles.

St. Louis & San Francisco.—The *Galena Branch* is completed from Joplin, Mo., west to Galena, Kan., 8 miles.

Missouri, Kansas & Texas.—The track of the *Southwestern Extension* is twenty-five miles south of Ft. Worth, Tex., an extension of 13 miles.

Texas & Pacific.—Extended from the last point noted (349 miles west of Dallas, Tex.) west 24 miles.

Northern Pacific.—Extended westward to Glendive, Montana, 28 miles.

Chicago, St. Paul, Minneapolis & Omaha.—The *Neillsville Branch* is completed from Humbird, Wis., east to Neillsville, 15 miles.

This is 145 miles of new railroad, making 2,563 miles this year, against 2,375 miles reported at the corresponding time in 1880, 1,083 miles in 1879, 819 miles in 1878, 731 miles in 1877, 932 miles in 1876, 518 miles in 1875, 727 miles in 1874 and 1,696 miles in 1873.

NEW YORK, LAKE ERIE & WESTERN EARNINGS, gross and net, have been reported for the month of May, completing two-thirds of the fiscal year. Compared with last year there is an increase of $184,346 (11.6 per cent.) in gross earnings, of $104,490 (10.7 per cent.) in expenses, and of $79,856 (12.9 per cent.) in net earnings. The latter is a very satisfactory result, considering the fact that the net earnings of the month in 1880 were 117 per cent. more than in 1879.

The gross earnings, expenses and net earnings in May for four successive years have been:

	1878.	1879.	1880.	1881.
Gross earnings	$1,172,961	$1,350,479	$1,582,544	$1,770,890
Expenses	919,482	1,064,687	972,435	1,070,925
Net earnings	$253,479	$285,787	$620,108	$699,965

The gross earnings were thus 31½ per cent. more this year than in 1879 and 51½ per cent. more than in 1878—which ought to be satisfactory. The increase in expenses is less rather than greater than was to be expected. Expenses are generally larger this year than last, and last year Erie expenses were probably unusually light, owing to immense renewals of road and rolling stock the previous year, which required less than the average repairs. But the greatest increase is in net earnings—145 per cent. more than in 1879, and 176 per cent. more than in 1878.

For the eight months ending with May this company has an increase of $1,569,418, or 13 per cent., in gross earnings, of $1,132,186, or 14.7 per cent., in working expenses, and of $437,231, or 10 per cent., in net earnings. The increase in net earnings is equal to nearly 5½ per cent. on the preferred stock.

The gross and net earnings and expenses for the eight months ending with May for four successive years have been:

	1877-78.	1878-79.	1879-80.	1880-81.
Gross earnings	$10,444,097	$10,495,251	$12,059,020	$13,626,448
Expenses	7,298,500	7,487,639	7,697,578	8,829,764
Net earnings	$3,145,597	$3,007,612	$4,359,451	$4,796,683

The gross earnings this year have been 30 per cent. more than in 1879 or 1878, and the net earnings nearly 60 per cent. more than in 1879, and 52½ per cent. more than in 1878—very great progress indeed, and made in comparison with years when traffic was generally heavy, though rates were much of the time very low.

The demoralized rates must very greatly affect the profits of this road, whose through freight is a very large proportion of its whole business. It has, however, a very large coal business unaffected by the present demoralization, and of course a large local traffic. It is not probable, however, that with rates as they are now it can make any further gains in profits during this fiscal year (till Oct. 1), and considerable losses are more probable. Last year, it should be remembered, the profits of the trunk lines in the summer months were exceptionally large—large without any example. A moderate decrease from them would be compatible with a perfectly healthy condition of traffic, and through traffic on the trunk lines is anything but healthy now.

EXPRESS COMPANIES' RIGHTS ON RAILROADS have been the subject of several decisions recently, which we feel sure will eventually have to be revised. The last one is in a suit of the Southern Express Company against the Iron Mountain Railroad, in which the decision is, virtually, that the railroad company must admit all express companies on equal terms, even if it does its own express business; and other

decisions have intimated that a railroad company has no right to do an express business. The objection to having an unlimited number of express lines on one road is that it absolutely prevents the economical conduct of the business; as in many places, probably in most, the whole business can be done just about as cheaply as a quarter of it. It would be just as reasonable to require that a railroad company should let out passenger trains or cars to a passenger company which should be authorized to sell tickets on its own account. The idea is, doubtless, to permit free competition on one and the same line in the express business, which is no more required than to permit such competition in the carriage of ordinary freight and passengers. We shall never reach a stable condition of things until companies, courts and people learn that this business is of such nature that it cannot possibly be conducted (without great danger and certain great waste) as an ordinary competitive business, any more than the post-office business can be; that to be well and cheaply done it must be of the nature of a monopoly, so far as each road is concerned. A large part of the vicious legislation is due to the attempt to introduce competition where competition can work only evil, increasing expenses and even increasing prices. But while this is true, the railroads are unwilling to accept the corollary of this proposition, which is that their business must be subject to a certain degree of public inspection and restriction. It is true that they have abundant reason, founded on experience of the kind of public control that has been attempted in many parts of this country, to fear the consequences of any admission of governmental regulation of their affairs; but to be perfectly efficient they must complete their monopoly—the very limited monopoly which it is possible for them to attain: and this then must be subject to such inspection and regulation as will prevent its abuse. Such competition as we now have, and especially such as would be attained by the multiplication of express lines over one route, is bought at enormous expense, most if not the whole of which the public has to pay.

THE EFFECT OF THE LOW RAIL RATES ON THE ERIE CANAL we have endeavored to trace from week to week since the low rates were made. A more complete view of this effect may be had, however, by examining the division of Buffalo shipments from the whole of the periods before and after the low rail rates were made. This we do below, showing the percentage of the total shipments going by rail as well as the number of bushels.

The shipments from Buffalo in successive weeks by canal and rail this year and last have been:

Week ending:	1881. By canal.	1881. By rail.	1881. P. c. by rail.	1880. By canal.	1880. By rail.	1880. P. c. by rail.
May 7.	1,812,000	1,202,500	40.0	2,388,515	1,328,500	35.7
June 3.	1,579,840	1,267,500	44.5	1,916,702	1,322 000	40.8
" 10.	2,016,400	1,468,000	36.7	2,665,950	1,450,900	35.2
" 17.	1,286,500	999,000	43-7	3,715,528	1,019,754	21.5
Av., 4 weeks.	1,673,685	1,159,400	41.0	2,671,689	1,280,289	32.4
June 24.	1,386,500	2,136,700	60.7	2,915,760	1,849,195	39.0
July 1.	917,460	2,129,600	70 0	2,069,000	1,819,950	47.0
" 8.	1,218 000	1,556,400	55.4	2,219 940	1,388,200	38.5
" 15.	1,275,600	1 995,200	61.0	2,591,741	1 514,435	37.0
Av., 4 weeks.	1,200,910	1,955 225	62.0	2,449,110	1,642,945	40.0

The very low rail rate first applied to the shipments of the week ending June 24, and the best illustration of the effect of these rates is made by comparing the average weekly shipments before and after these rates went into force. It will be seen that the canal shipments this year have averaged one quarter less since the 15-cent rate was made, while the rail shipments have averaged 70 per cent. more. The decline in canal shipments is the more significant, because it was not till the latter period that there was a great amount of grain to move, it not having been marketed by the producers. Further, the loss of the canal is not by any means measured by the gain of the railroads at Buffalo. A great deal more passes at Suspension Bridge, Salamanca, and junctions further south, than at Buffalo, some of which at every place has been diverted from the canal by the low rail rates. The average canal shipments since the low rates have been but half as great as in the corresponding weeks of last year, and at rates which averaged less than 4 cents a bushel, against 6¾ last year. Roughly speaking, the canal boats received $165,000 a week for carrying grain last year, and this year less than $48,000, and their receipts for grain in excess of tolls were $141,000 last year and $37,000 this—about one quarter as much. This is not only unfavorable for the Erie Canal, but also for the opening of the enlarged Welland Canal, from which a good deal has been expected.

CHICAGO SHIPMENTS EASTWARD continue very large, but somewhat less than when the low rail rates were first made; and there are indications that the supply of freight for such heavy shipments is giving out. The receipts of grain at Chicago, which have been heavy at an unusually late date, have now fallen off. During the first two weeks of July they had averaged 670,000 bushels daily, against 431,000 last year. Since that time the daily average has been but 431,000 bushels, against 445,000 last year. We have apparently now reached the usual period of midsummer dullness, but at an unusually late date. The total through rail shipments to the East for each week since navigation opened have been as follows, in tons:

Week ending—	1881.	1880.
May 7	22 351	27.030
" 14	36,046	24.485
" 21	32,888	29.0 7
" 28	47,523	34.218
June 4	40 029	32,403
" 11	37.6 0	42,504
" 18	54.2 6	68,361
25	81,660	55,394
2	67,933	46,995
9	56.167	34 221
16		34,589

The Board of Trade report published in the Chicago papers made the shipments for the week ending July 9 only 44,371 tons, or 11,796 tons less than the actual shipments; its report for the week ending July 16 made them 50,832 tons, of which the Grand Trunk took 11.1 per cent., the Michigan Central took 23.2, the Lake Shore 25.2, the Fort Wayne 15.6, the Pan-handle 18.5, and the Baltimore & Ohio 7.4 per cent.—the Grand Trunk slightly above and the Pan-handle very largely above their pool percentages and all the rest below.

WATER RATES have experienced the following changes during the past week ending with Wednesday. Lake rates have fallen from 3¼ to 2½ cents a bushel for corn from Chicago to Buffalo, and about the same in wheat from Milwaukee, though the rates from Milwaukee seem to be nominal. Last Saturday it was said that a contract for a cargo was made there for the first time in two weeks. On the other hand canal rates have advanced ¼ cent, and for nearly the whole week have been quoted at 4 cents a bushel for corn and 4½ wheat from Buffalo to New York. This does not appear to be on account of any pressure of traffic, for the canal shipments are as light as ever. These changes reduce the cost of sending a bushel of corn from Chicago to New York to about 6¾ cents.

Ocean rates have been pretty steady at 4½d. per bushel from New York to Liverpool by steam.

The considerable reduction in lake rates is probably due to a reduced pressure at Chicago. The receipts of grain there, which for several weeks had been exceptionally large, have now fallen to about the average; and the large quantities carried by the railroads have prevented the accumulation in store there would have been otherwise. It is in midsummer, for a few weeks before the new crops begin to come in, that lake and canal rates are usually lowest. They were so about the same time last year, when, however, the lake rate on corn did not go below 3½ cents, and reached that amount but for a day or two, while the canal rate on corn was 5 cents. Were we to go back another year, however—to 1879—we would find the rates 2 cents by lake and 4½ by canal for corn, having but just recovered from 1¾ and 3¼, to which they had been forced by rail rates even lower than we have been having recently.

THE RAIL GRAIN MOVEMENT has made less diversion from the lake and river routes than was to be expected. The average weekly shipments by each route from the eight Northwestern markets from the opening of lake navigation until the rail rate was reduced to 15 cents for 100 lbs. and in each week for which reports have been made since have been:

	—By rail.— Bushels.	P.c. of total.	—By river.— Bushels.	P c. of total.	By lake.	Total.
Av. to June 18.	1,613,577	29.8	475,408	8.8	3,325,609	5,414,594
Week ending—						
June 25	3,566,702	47.8	547.000	7.3	3,343,057	7,456,759
July 2	2,542,753	40.6	263,039	4.2	3,453,881	6,259,673
July 9	2,203,463	35.2	355,560	5.7	3 702 418	6 261,411

The first week after the reduction the rail shipments were 1,953,000 bushels above the average of the seven weeks before, the second week 929,000 more, the third week only 590,000 bushels more than that average. The river shipments have fallen about one-sixth below the previous average, and judging by the great falling off of St. Louis receipts in the last two weeks will be reduced still more; but the average reduction in river shipments thus far is only 85,000 bushels a week. The lake shipments, on the other hand, have been larger since than they averaged before the reduction in rail rates.

THE SOUTHWESTERN ASSOCIATION has escaped for the present the dangers that appeared to threaten it (and rates were already broken on part of the traffic), and is again in full operation, making divisions in accordance with the old plan until something new shall have been agreed upon. At the meeting last week a proposition to appoint three commissioners to decide what business shall be pooled, the number of "divisions" in the Association, the roads in each division, the percentage of each division, and of each line in each division met general approval, with the exception that the Wabash and the Hannibal & St. Joseph objected to leaving the question of divisions, which involved the maintenance or abolition of the Hannibal Division, to arbitration. Not being able to settle this question on the spot, it was agreed to continue the Association on the old basis and have another meeting Sept. 1, at which a special committee will report upon the plan submitted at last week's meeting, which, besides the provision for arbitration, declared that business to or from any common point shall either be pooled by all the lines reaching it or not at all; that the traffic of a common point shall be treated alike by whatever route carried; that the decision of the Commissioner shall be binding, and that 45 days' notice must be given of withdrawal. All freight except lumber was to be included.

THE TENDENCY TO INCREASE IN LOADS OF FREIGHT CARS is illustrated by the Chicago & Alton circular which we publish under the head of "Traffic and Earnings." By it cars of this road, in which heretofore the maximum load permitted was 28,000 lbs., may hereafter be loaded with 30,000 lbs., and car-load rates will not be given unless they contain 24,000 lbs. Cars are marked with their maximum capacity. To prevent over-loading double rates are charged on any weight in excess of this maximum capacity that shippers may put in them; but to prevent waste of room and unnecessary dead weight, the low car-load rates are given only when the car is loaded within 6,000 lbs. of its marked capacity. It is but a few years ago that 20,000 lbs. was a car-load, and now this road, like many others, has many cars which carry 40,000 lbs. as a maximum, and in which less than 34,000 is not counted as a load.

THE MISSOURI TRAIN ROBBERY is simply a repetition of a crime which we have had one or more examples of nearly every year now for some years. It is certainly discreditable to the country that such things should be possible; and the number of cases in which the perpetrators have been caught and punished is so small that we fear that train-robbing is beginning to be looked upon as a peculiarly safe crime for the criminals, which makes it so much the more dangerous for the rest of us. The state and the railroads should unite in a determined hunt for the assassins, never to be given up till they are hanged.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends have been declared as follows:

Oregon Railway & Navigation Co., 2 per cent., quarterly, payable Aug. 2.

Atchison, Topeka & Santa Fe, 2 per cent., quarterly, payable Aug. 15.

Wabash, St. Louis & Pacific, 1½ per cent., quarterly, payable Aug. 15. Transfer books close July 30.

Terre Haute & Indianapolis, 4 per cent., semi-annual, payable Aug. 1.

Foreclosure Sales.

The *Cairo & St. Louis* road was sold under foreclosure in Springfield, Ill., July 14, and bought for $4,000,000 by Charles J. Canda and J. A. Horsey, of New York, acting for the bondholders, who have already organized the St. Louis & Cairo Company. The road extends from Cairo, Ill., to East Carondelet, 146.5 miles, and its trains use the East St. Louis & Carondelet track 3.5 miles, to East St. Louis.

American Society of Mechanical Engineers.

President Robert H. Thurston has issued the following circular:

"A regular session of this Society will be held at Altoona, Pa., commencing at 10 a. m., Wednesday, Aug. 10, next.

"Members are reminded that, while extended papers on subjects of general interest, and containing new and important information, are desired by the Committee on Publication and are welcomed by every member, short memoranda giving, in brief, new information, derived either by direct experiment or from peculiar experiences, are also desired.

"Papers should be forwarded to the Secretary at the earliest possible moment, in order that the Committee on Publication may consider and make recommendation concerning them to the Council before the first day of the meeting. A Council meeting will be held at the headquarters of the Society—to be hereafter designated—at nine o'clock in the morning of August 10, next.

"The Secretary will shortly publish a programme for the meeting."

Members are requested to inform the Secretary, as promptly as possible, of the probability of their being present at the coming meeting.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—Mr. Wm. B. Strong, for some time past Vice-President and General Manager, has been chosen President, in place of T. Jefferson Coolidge, resigned.

Atlantic & Pacific.—Mr. H. C. Nutt, of Chicago, has been chosen President, in place of Thomas Nickerson, resigned. Mr. Nutt has for some time been connected with the road.

Chicago & Alton.—Mr. Wm. Huckinson has been appointed Road-Master of the Third Division, with office at Alton, Ill., in place of J. Snowball.

Cincinnati & Ohio River.—This company has been organized with the following directors: A. J. Warner, Marietta, O.; Samuel Thomas, Columbus, O.; John P. Follett, Wm. M. Ramsay, Cincinnati; James McArthur, Chicago. The board elected A. J. Warner President; Wm. M. Ramsay, Secretary and Treasurer.

East Broad Top.—Mr. G. A. Haggerty has been appointed Master of Machinery of this road and of the Rockhill Coal & Iron Company. Office at Orbisonia, Huntingdon County, Pa. Mr. Haggerty has been Master Mechanic of the Galena & Wisconsin and of the Springfield, Jackson & Pomeroy road.

East Tennessee, Virginia & Georgia—The following circulars from President E. W. Cole, are dated Knoxville, Tenn., July 8:

"Major John F. O'Brien, in addition to his duties as General Superintendent of the East Tennessee, Virginia & Georgia Railroad, is hereby appointed General Superintendent of the Knoxville & Ohio Division, Alabama Central Division and Macon & Brunswick Division. All superintendents and other officers of the divisions named will report to him as such.

"In addition to his duties as General Passenger and Freight Agent of the East Tennessee, Virginia & Georgia, Memphis & Charleston, and Alabama Central railroads, James R. Ogden is hereby appointed General Freight and Passenger Agent of the Knoxville & Ohio and Macon & Brunswick divisions."

The following circular from the General Superintendent is dated Knoxville, Tenn., July 15:

"On and after this date the following will be the organization of the East Tennessee, Virginia & Georgia Railroad.

"1. Main Stem. Bristol to Chattanooga.

"2. North Carolina Division (late Cincinnati, Cumberland Gap & Charleston Railroad). Morristown to North Carolina state line.

"3. Ohio Division (late Knoxville & Ohio Railroad). Knoxville to Kentucky state line. Of these three Divisions Maj. F. K. Huger is hereby appointed Division Superintendent, with headquarters at Knoxville, Tenn.

"4. Selma Division (late Selma, Rome & Dalton Railroad). Cleveland, Tenn., to Selma, Ala.

"5. Alabama Central Division (late Alabama Central Railroad). Selma, Ala., to Meridian, Miss. Of these two divisions, Mr. Jno. M. Bridges will be Division Superintendent, with headquarters at Selma, Ala.

"6. Macon & Brunswick Division (late Macon & Brunswick Railroad). From Macon to Brunswick, Ga.

"Of this latter division, Mr. J. M. Edwards will be Division Superintendent, with headquarters at Macon, Ga.

"Each division superintendent in addition to his other duties will act as Purchasing Agent for his own division.

"All communications relating to transportation, cars,

motive power or roadway, will be addressed to the superintendents of the respective divisions."

Genesee Valley.—This company is now provided with two boards of directors. The Martin party, who purchased a controlling interest in the road (as they claim), met in New York, July 12, and elected the following directors: Edward F. Winslow, Jesse Seligman, Archer N. Martin, Henry A. V. Post, Isaac N. Seligman, John W. Jones, James D. Fish, Frederick Wolff, John W. Gilbough, Charles E. Kimball, Morgan Gibbes Post, Clifford T. Arthur, John D. Reynolds.

On the same day the so-called minority party, who refuse to recognize the Martin stock, met in Rochester and elected the following directors: G. H. Bush, J. M. Hammond, G. H. Riley, H. P. Frost, A. D. Tingley, F. R. Eaton, J. H. Selkreg, G. E. Fisher, J. H. Bidster, Tunis Bidster, H. W. Early, C. N. Yeomans. This board elected G. H. Bush President; G. E. Fisher, Vice-President; J. H. Selkreg, Secretary; George S. Riley, Treasurer. Mr. Fisher was subsequently arrested for contempt of court, the Rochester election having been enjoined by a judge in Allegheny County.

Indianapolis & Toledo.—The directors of this new company are: George D. Emery, E. B. Martindale, Indianapolis, Ind.; T. P. Brown, J. K. Hamilton, W. T. Walker, Toledo, Ohio.

Jacksonville & Kansas City.—The directors of this new company are: Oliver Coultas, Scott Wike, Pittsfield, Ill.; Charles Frost, James W. Riggs, Winchester, Ill.; Wm. Brown, Henry L. Clay, John Gordon, Wm. S. Hook, Edward King, Samuel F. Rowley, Edward Scott, Wm. E. Veicht, Jacksonville, Ill.

La Salle & Mississippi.—The directors of this new company are: Alexander Campbell, Daniel Evans, H. J. Miller, Wm. Mitchell, Wm. Reed. Office in La Salle, Ill.

Live Oak & Rowland's Bluff.—This company has been organized by the election of the following directors: H. M. Drane, George W. Haines, H. S. Haines, W. P. Hardie, D. M. McAlpin, John C. Reynolds, A. O. Shad, W. P. Taylor, John F. White. The board elected H. S. Haines, President; John F. White, Vice-President; W. P. Hardie, Secretary and Treasurer.

Lockport & Buffalo.—This company last week elected the following directors: Thomas T. Flagler, Joseph A. Ward, James Jackson, Jr., John Hodge, Benjamin Carpenter, Lewis S. Payne, Elisha Moody, J. Carl Jackson, Levi F. Bowen, John H. Buck, James O. King, Isaac H. Babcock, S. Curtis Lewis. The road is worked by the New York, Lake Erie & Western Company.

Louisiana Western.—Mr. J. F. Crosby has been appointed General Manager. He is also General Manager of the Texas & New Orleans road.

Mr. C. A. Burton has been appointed Superintendent. He is also Superintendent of the Texas & New Orleans road.

Manhattan Elevated.—The New York Supreme Court has granted the Attorney General's motion and appointed John F. Dillon and A. L. Hopkins Receivers. Mr. Dillon was formerly United States Circuit Judge, and is considered high authority on corporation law. Mr. Hopkins is Vice-President of the Wabash.

Monongahela & Youghiogheny.—The officers of this new company are: President, Henry Hice, Beaver, Pa.; directors, James I. Bennett, D. Hostetter, Herbert du Puy, Allegheny, Pa.; Jacob Henrici, Economy, Pa.; Wm. M. Lyon, Pittsburgh.

North Carolina.—The following state directors have been appointed by the Governor: Armistead Burwell, J. L. Morehead, Charlotte; Kerr Craige, Salisbury; W. S. Roulhac, Durham; R. F. Hoke, Raleigh; W. F. Kornegay, Goldsboro; R. W. Thomas, Newberne; Donald McRae, Wilmington. The Governor has also appointed Charles M. Busbee, of Raleigh, proxy to vote the state stock.

At the annual meeting in Goldsboro, N. C., July 14, the stockholders chose the following directors: Thomas M. Holt, Alamance, N. C.; H. W. Fries, Salem, N. C.; M. L. Holmes, Salisbury, N. C.; R. B. Hayward, Raleigh, N. C.

The board re-elected Thomas M. Holt, President; P. B. Ruffin, Secretary and Treasurer. The road is leased to the Richmond & Danville Company.

Oregon Railway & Navigation Co.—Mr. C. H. Prescott has been appointed General Manager, in place of T. F. Oakes, who is now Vice-President of the Northern Pacific.

Mr. Charles Smith succeeds Mr. Prescott as Comptroller of the Company.

Mr J. M. Buckley has been appointed Assistant General Manager. Offices in Portland, Oregon.

Pennsylvania Company.—It is announced that Mr. D. W. Caldwell has been appointed General Manager of this company's lines and will take charge Aug. 1, succeeding Mr. J. D. Layng, who has gone to the Chicago & Northwestern. Mr. Caldwell will retain his position as General Manager of the Pittsburgh, Cincinnati & St. Louis, thus having charge of all the Pennsylvania lines west of Pittsburgh.

It is understood that Mr. Wm. A. Baldwin, now General Superintendent of the Philadelphia & Erie, will be assistant to Mr. Caldwell.

Portsmouth, Great Falls & Conway.—This company has elected directors as follows: John Comstock, George E. B. Jackson, Samuel C. Lawrence, E. B. Phillips, Willard Phillips. The road is leased to the Eastern Company.

Quebec, Montmorenci & Charlevoix.—This company was recently organized at Quebec by the election of the following directors: J. B. Z. Dubeau, T. E. Foster, O. Gauthier, A. Labergé, Charles Langelier, F. M. Langelier, L. A. Roberge. The Board elected J. B. Z. Dubeau President; O. Gauthier, Vice President.

Saginaw Valley & St. Louis.—At the annual meeting July 13 the following directors were chosen: H. L. Holcomb, St. Louis, Mich.; A. W. Wright, Saginaw, Mich.; J. B. Mulliken, Detroit, Mich.; Charles Francis Adams, Jr., James H. Blake, John A. Burnham, Alpheus Hardy, A. H. Hardy, H. H. Hunnewell, Charles Merriam, G. O. Shattuck, Nathaniel Thayer, Jr., Charles L. Young, Boston.

St. Paul & Duluth.—The following circular has been issued:

"Mr. H. W. Smith retiring from the service of this company, the office of Train Master is abolished.

"Mr. Henry T. Simpson is appointed Assistant Superintendent, and Superintendent of Telegraph, with general charge of train and telegraph men, train dispatching, and the movement and distribution of cars. Employés will report to and receive orders from him accordingly."

Staten Island North & South Shore.—The officers of this new company are: President, Wm. K. Soutter; Vice-President, Richard Latourette; Secretary and Treasurer, Thomas Clute.

Sussex.—Mr. Andrew Reasoner is to be President and Superintendent. He is also Superintendent of the Morris & Essex Division of the Delaware, Lackawanna & Western.

Toledo & Indianapolis.—The officers of this new Ohio company are: President and Treasurer, T. P. Brown; Secretary, J. K. Hamilton; Chief Engineer, J. D. Cooke. Office in Toledo, Ohio.

Turtle Creek & Allegheny.—The officers of this company are: President, Thomas M. Carnegie; directors, John Walker, J. J. Donnell, John W. Vandevoort, Wm. A. McIntosh, Frank Semple. Office in Pittsburgh.

Utah Central.—The directors of the consolidated company have elected Sidney Dillon President; John Sharp, Vice-President and General Manager; James Sharp, Assistant Superintendent.

Vicksburg, Shreveport & Pacific.—The following circular from the office of Vice-President and General Manager John Scott is dated Monroe, La., July 11:

"Mr. F. Y. Dabney is hereby appointed Chief Engineer and Superintendent of the road. In that capacity this officer will have full control of the operations of the road, and as my immediate representative you are hereby requested to pay full attention to all orders coming from him."

Western, of Minnesota.—At the annual meeting in St. Paul, Minn., last week, the following directors were chosen: George L. Becker, F. R. Delano, R. M. Newport, Alexander Ramsey, L. E. Reed, St. Paul; George W. Cass, Johnston Livingston, New York; C. B. Wright, Philadelphia; Frederick Billings, Woodstock, Vt. The road is leased to the Northern Pacific Company.

PERSONAL.

—Mr. B. W. Gossage, Chief Engineer of the Canada Southern Railway, has resigned his position.

—Mr. T. Jefferson Coolidge has resigned his position as President of the Atchison, Topeka and Santa Fe Railroad Company.

—Mr. W. C. Alberger retires from the position of Superintendent of the Western Division of the Hannibal and St. Joseph road, the office being abolished.

—Mr. Lewis Williams has resigned his position as General Manager of the Cincinnati, Hamilton & Dayton, and has, it is said, accepted a position on the New York, Chicago & St. Louis road.

—Mr. S. W. Cummings, General Passenger and Ticket Agent of the Fitchburg Railroad, has resigned, taking effect Aug. 15, to accept a position offered him on a Western railroad. His headquarters will be in Boston. Mr. Cummings has been connected with the railroad passenger business for over sixteen years, and his many friends will be gratified to learn of his continued prosperity.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Six months ending June 30:				
Ala. Gt. Southern.	$314,622	$245,996	I. $58,656	23.5
Cairo & St. Louis.	203,995	178,895	I. 25,100	14.0
Cleve., Mt. Ver. & Del.	203,571	212,112	D. 8,541	4.0
Det., Lan. & No.	622,257	569,007	I. 53,250	9.3
Houston, E. & W. Texas.	66,013	44,660	I. 21,353	4.7
Ill. Central, Ill. lines	2,920,727	2,809,762	I. 110,965	3.9
Iowa lines.	739,278	804,274	D. 64,996	8 1
Indiana, Dec. & Springfield	215,159	161,427	I. 53,732	33.4
Nash., Chatta. & St. L.	1,079,223	1,024,980	I. 54 243	5.3
Net earnings.	433 904			
Peoria, Dec. & Ev.	279,317	175,619	I. 103,398	58.7
Texas & Pacific.	1,619,197	1,129,221	I. 489,976	43.4
Five months ending May 31:				
Grand Trunk	£385,277	£322,755	I. £62,522	7.6
Net earnings.	262,774	246,010	I. 16,764	6.8
N. Y. L. E. & Western	$8,202,410	$7,429,252	I. $773,158	10.8
Net earnings.	2,667,395	2,735,761	D. 68,366	2.5
Month of May:				
Grand Trunk	£180,717	£158,939	I. £21,778	13.7
Net earn.	61,164	51,699	I. 9,465	18.2
Gt. Western	78,596	72,062	I. 6,534	9.1
Net earn.	20,199	20,158	I. 41	0.2
N. Y. Lake Erie & W.	$1,776,850	$1,592,544	I. $184,346	11.6
Net earn.	699,965	620,108	I. 79,857	12.7
Month of June:				
Ala. Gt. So.	$51,735	$40,821	I. $10,914	24.6
Cairo & St. Louis.	33,551	33,868	D. 317	1.0
Central Iowa.	100,000	60,000	I. 40,000	66.7
Cleve., Mt. Ver. & Del.	35,484	35,164	I. 320	0 9
Det., Lan. & No.	120,040	90 142	I. 29,898	33.2
Eastern.	267,888	239,888	I. 28,000	11.7
Houston, E. & W. Tex.	13,813	5,374	I. 8,439	15.6
Ill. Central, Ill. lines	603,614	548,231	I. 55,413	10.1
Iowa lines.	157,740	133,536	I. 24,204	1.0
Ind., Dec. & Springfield	33,165	39,153	D. 5,988	15.4
Nash., Chatta. & St. L.	154,549	144,430	I. 10,116	7.0
Peo., Decatur & Evansville	63,581	42,570	I. 11,011	25 8
Texas & Pacific.	233,013	133,951	I. 99,062	72.4
First week in July:				
Cin. & Mun.	$141,133	$166,506	D. $25,367	15.2
Cin. & Eastern Ill.	35,778	25,813	I. 4,965	19.1
Int. & Gt. No.	43,329	21,207	I. 21,127	99.2
St. L., I. M. & So.	124,700	102,041	I. 22,659	21.3
Wab., St. L. & P.	237,020	214,941	I. 23,079	10.8
Second week in July:				
Chi., Mil. & St. P.	$361,000	$216,428	I. $144,572	66.9
Denver & R. G.	131,920	78,170	I. 53 750	68.9
Northern Pacific.	94,764	54,481	I. 40,283	73.9
Week ending July 8:				
Great West rn.	$92,743	$93,375	D. $632	6.7
Week ending July 9:				
Chi. & Gd. Trunk	$20,947	$23,670	D. $5,723	21.2

Grain Movement.

For the week ending July 9 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments. Total.	By rail.	P. c. by rail.	Atlantic receipts.
1874	3,082,391	3,205,311	276 288	8.6	3,581,237
1875	3,112,134	3,418,258	1,173,195	34 4	2,416,073
1876	2,028,445	2,877,186	1,228,678	42.7	4,873,451
1877	2,550,086	3,341,124	669 103	20.0	2,240,164
1878	3,118 902	2,907,635	922,931	31.1	2,907,245
1879	4,2 0,273	4,135,059	1,440,981	34.9	3,083,935
1880	4,560,327	6,375,678	1,605,859	25.2	8,137,107
1881	5,758,827	6,261,411	2,203,463	35.2	6,834,152

The receipts of the Northwestern markets for the week this year are 30 per cent. less than those of the previous week, and are the smallest for seven weeks. The shipments of these markets were almost exactly the same as the week before. The *rail* shipments, which were 8,566,702 bushels in the week ending June 18, and 2,542,753 in the week ending July 2, have further fallen off, but are still much greater than the average of 1,613,000 bushels that the railroads had received from the opening of lake navigation until the 15-cent. rate was made. Besides the rail shipments, 255,500 bushels, or 5.7 per cent of the whole, were shipped down the Mississippi. The Atlantic receipts were somewhat less than the week before, but have been exceeded in but one other week of this year.

Of the Northwestern receipts Chicago had 64.4 per cent, St. Louis 10.5, Toledo 7.7, Peoria 7.7, Milwaukee 6 1, Detroit 2.4, Cleveland 0.8 and Duluth 0.4 per cent. Chicago maintains its recent great predominance, while St. Louis has not half its average receipts before the 15-cent rate was made.

Of the Atlantic receipts New York had 53.7 per cent., Baltimore 12.7, New Orleans 10 3, Philadelphia 9.1, Boston 8.4, Montreal 5.6, and Portland 0.2 per cent. The notable feature is the large receipts at New Orleans, which have been exceeded but four times this year and arrive at a season when New Orleans receipts are very light. New York's receipts are a larger proportion of the whole than is usual when rail rail rates are very low.

Exports from Atlantic ports for five successive weeks have been:

	Week ending July 13.	July 6.	June 29.	June 22	June 15.
Flour, bbls.	82,019	63,348	64,313	59,015	87,677
Grain, bush.	4,141,783	3,773,376	4,839,032	3,427,710	4,039,736

Receipts and shipments at Chicago and Milwaukee for the week ending July 15 were:

	Receipts. 1881.	1880.	Shipments. 1881.	1880.
Chicago	3,613,895	2,545,582	3,030,781	4,851,042
Milwaukee	360,475	156,078	165,934	202,735

Taking both places together there was an increase of nearly 50 per cent. in the receipts, but a *decrease* of 25 per cent. in the shipments, although rates this year, by water as well as by rail, were much lower than last year.

Receipts and shipments at Buffalo for the same week ending July 15 were:

	Receipts. 1881.	1880.	Shipments. 1881.	1880.
By water	2,896,000	3,234,000	1,273,680	2,591,741
By rail	740,400	536,500	1,998,200	1,514,435
Total	3,636,400	3,790,500	3,273,880	4,106,176

The notable feature is the decrease of 50 per cent. in canal shipments, only partly balanced by an increase of 32 per cent. in rail shipments.

Receipts at four Eastern ports for the week ending July 15 were:

	New York.	Boston.	Philadelphia.	Baltimore.	Total.
1881	3,030,336	531,870	851,350	880,897	5,294,453
P. c. of total.	47.2	10.0	16.1	16.7	100.0
1880	3,600,615	501,100	1,098,800	1,517,076	6,807,591
P. c. of total.	54.2	7.4	16.1	22.3	100.0

Last year at this time Baltimore had already begun to receive great quantities of new wheat from the Ohio valley. This year the harvest is so late that it has not begun to come forward yet, and, moreover, there is much less of it.

Coal Movement.

Coal tonnages for the week ending July 9 are reported as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Anthracite	353,397	392,360	D. 38,963	9.9
Semi-bituminous	91,558	66,422	I. 25,136	37.8
Bituminous, Penna	31,923	30,354	I. 1,569	5.2
Coke, Penna	35,635	25,661	I. 9,974	38.8

The week was a short one, including a general holiday.

A transfer of ownership in the important coal property of the Tennessee Coal & Railroad Company is noted elsewhere. It is understood that the new owners intend to increase the production from the property.

Chicago coal receipts for the two months ending June 30 were as follows:

	Anthracite. 1881.	1880.	Bituminous. 1881.	1880.
By lake	144,735	121,831	74,791	70,906
By rail	38,802	23,957	364,332	227,751
Total	183,537	145,788	439,114	298,657

Bituminous coal includes coke. Total receipts of all kinds of coal for the two months were: 1881, 622,651; 1880, 444,445; increase, 178,206 tons, or 40.1 per cent. Of this year's receipts 219,526 tons, or 35.2 per cent, were by lake, and 403,125 tons, or 64.8 per cent., by rail.

The official accountant's statement of anthracite tonnage for June and the six months, differing somewhat in form from the weekly statements, is as follows:

	June. 1881.	1880.	Six months. 1881.	1880.
Phila. & Reading	580,613	481,799	2,024,086	2,632,231
Lehigh Valley	484,404	259,261	2,498,404	1,020,901
Central, of New Jersey	380,041	270,832	1,831,609	1,514,226
Delaware, Lacka. & Western	388,352	239,196	4,948,849	1,603,296
Del. & Hudson Canal Co.	239,899	183,738	1,416,238	1,200,957
Pennsylvania R. R. Co.	210,249	156,908	1,033,025	721,897
Pennsylvania Coal Co.	127,132	77,857	591,578	473,691
N. Y. Lake Erie & Western	42,146	32 249	222,007	181,941
Total	2,418,238	1,836,640	11,467, 96	10,3 2,123

Increase for the month, 581,598 tons, or 31.7 per cent.; for the six months, 2,155,376 tons, or 20.9 per cent. Every company shows an increase both for the month and the half-year.

The stock of coal on hand at tide-water shipping points reported June 30, 1881, was 598,565 tons against 562,719 tons on May 31, an increase of 35,846 tons, or 6.4 per cent., during the month.

Chicago and Milwaukee Receipts.

For the first two weeks of July receipts are reported as follows for four successive years:

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bu.	3,987 893	4,634,610	5,177,717	8,047,140
Flour, bbls.	83,323	102,042	88,070	128,235
Hogs, No.	163,938	105,782	260,542	253,428
Milwaukee:				
Grain, bu.	765,602	611,353	347,728	626,742
Flour, bbls.	75,948	79,870	80,425	154,986
Hogs, No.	6,877	5,542	9,839	17,481

The grain receipts at Chicago were never so large in July before; but this is largely due to the lateness of the season, which prevented the marketing of grain earlier. By far the larger part of it (70 per cent.) is corn, which comes chiefly from Illinois and Iowa. Taking flour and grain together at both places, the receipts are equivalent to 10,402,000 bushels this year, against 7,085,000 last year—an increase of 47 per cent. Usually by the first of July receipts become light at these markets and remain so until after harvest. Within the past few days this year they have fallen off largely.

Southwestern Railway Association.

At the adjourned meeting in Chicago, July 13, there was a full attendance. Mr. R. R. Cable, of the Rock Island road,

presented a resolution to the effect that a commission be constituted, to consist of three gentlemen, of whom Commissioner Midgley shall be one, whose duty it shall be to decide upon what business of the association shall be pooled, the number of divisions to be allowed in the pool, the number of lines in each division, the percentages to be allotted to each division, and the percentages to be allowed to each line in the different divisions, provided that any business passing to or from common points shall be pooled by all the lines, or it shall not be pooled by any of them; the traffic passing to or from common points shall be treated alike by whatever route it is carried. The decision of this commission to be good for six months from Aug. 1. 1881, and 45 days' notice to be given whenever any line desires to withdraw from this agreement. This agreement is to be binding upon all freight business except lumber.

This resolution was discussed for some time and an adjournment was had to the following day.

On July 14, after further discussion, the whole matter was referred to a committee consisting of Messrs. Cable, of the Rock Island; Hays, of the Missouri Pacific, and Gault, of the Wabash, who will report to the association on September 1.

Commissioner Midgley was then empowered to restore freight rates at once between Chicago and Southwestern points, to divert tonnage from one road to another in accordance with the pooling agreement, and also to divert business at his discretion, in case rates are cut. The meeting substantially agreed to continue the present percentages of traffic until the meeting in September. The agents of the seven lines comprised in the pool were accordingly notified to restore and maintain rates. The association then adjourned until Sept. 1.

Maximum and Minimum Car-loads.

Mr. James Smith, General Freight Agent of the Chicago & Alton Railroad, has issued the following circular to agents and shippers:

"Taking effect this day and until further notice the following rules will govern in regard to the maximum and minimum weights to be allowed on car-load freight:

"*First*—All cars formerly of 28,000 lbs. capacity, and upon which the capacity is not marked, may be loaded not to exceed 30,000 lbs., and all cars on which the capacity is shown may be loaded to that capacity, without additional charge above a pro rata proportion of the car-load rate.

"*Second*—The minimum quantity to be charged for on the below-mentioned articles shipped in car-load lots will be 24,000 lbs. for cars that can be loaded up to 30,000 lbs., and 6,000 lbs. less than the capacity of the cars on which the capacity is marked. Thus, if a car is stenciled with 'capacity 40,000 lbs.,' the minimum weight to be charged for on any of the following articles will be 34,000 lbs.: brick, clay, coal, grain, ice, iron (pig and railroad), iron (scrap), lard, lime in bulk, lime in barrels, estimated weight 200 lbs. per barrel, lumber, latn, shingles and posts, malt, meats in bulk, boxes, or barrels, salt, cement and plaster in barrels, estimated weight 300 lbs. per barrel, except Portland cement, which will be estimated at 400 lbs. per barrel, sand, stone, tile (drain).

"*Third*—All excess above the maximum weight above specified, or above the capacity of cars as marked, will be charged at double proportionate rate in every instance.

"*Fourth*—The rules laid down in Circulars 57 and 58½, dated Nov. 18, 1880, and Jan. 20, 1881, respectively, in regard to the small coal-cars of this company, capacity 20,000 pounds, will remain in effect until further notice.

"*Fifth*—Agents will endeavor at all times to have the cars loaded as nearly as possible to their full capacity in order to avoid unnecessary hauling of cars.

"*Sixth*—The rules contained in Circular No. 51, dated May 10, 1880, in regard to the weighing of cars are still in effect and must be rigidly adhered to.

"*Seventh*—Car-load freight received from connecting lines will be charged for at actual weight only, provided same is not less than 20,000 lbs., the latter weight being the minimum to be charged for, unless special provision is made in the classification for a less minimum car-load weight on the article.

"*Eighth*—Foreign cars on which capacity is shown should be loaded to that capacity as nearly as possible in all cases. The minimum to be charged for on such cars will be 24,000 lbs. for the articles hereinbefore enumerated, and on all other freight 20,000 lbs., unless special provision is made in the classification for a less minimum car-load weight. On all excess above capacity of foreign cars as marked, or in excess of 30,000 lbs., when no capacity is given, will be charged at double proportionate rate."

RAILROAD LAW.

Rights of Express Companies.

A press dispatch from Little Rock, Ark., July 14, says: "Judge Geo. W. McCrary, of the United States Circuit Court, has just rendered a decision in the suit brought by the Southern Express Company to restrain the Iron Mountain Railroad from charging the complainants higher rates on express matter than it charges for similar express matter received from or delivered to itself or the Pacific Express Company, and also from discriminating against the plaintiff in favor of itself or any other express company or person in the matter of rates. A temporary injunction was granted, which the respondent prayed should be dissolved. By consent the case was submitted to Judge McCrary, whose decision was to-day made public.

"The following is a synopsis:

"First—A railroad company is quasi-public property, and bound by the laws regulating the powers and duties of common carriers, persons and property.

"Second—It is the duty of such company, as a public servant, to receive and carry goods for all persons alike, without injurious discrimination as to rates or terms.

"Third—The business of expressage has grown into a public necessity; it is the means whereby articles of great value may be carried over long distances with certainty, safety and celerity, being placed in the hands of a special messenger, who is to have the charge and care of them en route.

"Railroad companies must, in common with the public, recognize the necessity for this mode of transportation, and must carry express packages and a messenger in charge thereof for all express companies that apply, on the same terms, unless excused by the fact that so many apply that it is impossible to accommodate all—a state of things not likely to occur.

"If it be said that this is giving to express companies privileges not afforded to other shippers the answer is, the nature of the express business makes special facilities for its transaction necessary, and the case is, therefore, properly exceptional.

"Fourth—It is not necessary now to determine whether a railroad company may under its charter engage in the express business and undertake to carry and deliver packages beyond its line. It is enough for the present to say that if it professes to engage in the business at all it must do so upon terms of perfect equality with all other express companies, and the Court will see that it does not take to itself any privileges it does not extend to complainant. The motion to dissolve the injunction is overruled."

Running Sunday Trains.

Judge Jackson, of the Circuit Court at Louisville, has just decided a case of more than ordinary interest. The Judge takes ground that a state cannot pass laws stopping railroads from running on Sundays, as such action would interfere or obstruct the inter-state commerce, and no such restriction can be placed upon the traffic of the country. After considering the terms of the statute, and the question whether the running of the train was a work of necessity or not, the Judge concludes as follows:

"The conclusion is irresistible that a state cannot pass any law which interferes with or even obstructs inter-state commerce, and that any law of a state which does or is sought to be applied in the interference or obstruction of such commerce, or the communication between the states—the transportation of freight or passengers—in so far as it relates to or is sought to be so applied, is void. The trains, therefore, of the defendant, on the Sunday referred to, were engaged in the transportation of such commerce, and of the United States mails, and are sheltered by the constitutional provision upon which the defendant relies. The acts of defendant were not prohibited by the Federal government, and it is not in the power of this or any other state to prohibit the same. The states are forbidden to 'regulate commerce.' The states cannot stop the mails of the United States. If the statute of Kentucky now being considered is susceptible of such a construction, then, to that extent, it is clearly in conflict with the constitution of the United States. It would be 'regulating,' or attempting to do so, to stop, even for a day, inter-state transportation of passengers or freight. It has been shown to be settled by the decisions of the Supreme Court of the United States that such inter-state transportation is beyond the reach of the legislative control of a state. To impose a penalty upon the defendant in this case would be to do so in the face of these decisions and of a plain provision of the constitution of the United States. It is hard to conceive that the framers of the Sunday law of this state ever contemplated that any one would seek to apply it in a case of this kind, or that it was even susceptible of being applied to local accommodation trains. But as the statute is sought in this case to be enforced against the defendant, the decision is that it cannot be so applied without a violation of the powers of the general government.

"Upon both of the grounds presented and argued in the case—the question of necessary work and the individuality of the statute as sought to be applied—the petition is dismissed."

THE SCRAP HEAP.

Locomotive Building.

The Dickson Manufacturing Co., at Scranton, Pa., lately delivered a new engine to the Port Jervis & Monticello road. The shops are full of orders.

The Chicago, Burlington & Quincy shops in Aurora, Ill., are building four heavy passenger engines and five switching engines for the use of the road.

Fleming & Sons, at St. John, N. B., have finished their contract for nine freight engines for the Intercolonial road, and have begun work on a new order for seven passenger engines for the same road.

The Brooks Locomotive Works, at Dunkirk, N. Y., are full of work, with orders for some time ahead.

Car Notes.

Van Liew's grain car door, which has been for several years used on all new cars built for the Pennsylvania lines west of Pittsburgh, has now been adopted for the lines east of Pittsburgh, and is being put on 1,500 cars now under construction.

The Lebanon Manufacturing Co., at Lebanon, Pa., is building 200 refrigerator cars for the American Transit Co.

The Denver & Rio Grande shops in Denver, Col., have lately completed 300 new freight cars for the road.

The car works of Michael Schall, at York, Pa., are building 500 box cars for the Pennsylvania Railroad Company.

Iron and Manufacturing Notes.

The rolling mill at Moundsville, W. Va., has been bought by Kloman Brothers, of Pittsburgh, and will be run on shape iron for bridge work, etc.

The furnace of the Wheeling Iron & Nail Co., at Wheeling, W. Va., is being rebuilt and will go into blast as soon as finished.

The Cape Ann Forge Works, at Gloucester, Mass., have just added a large steam-hammer, built by Morgan, Williams & Co., at Alliance, O., to the plant, and are now ready to make the heaviest class of forgings.

The New River Mineral Co. has completed a new charcoal furnace at New River, Va., and has put it in blast.

Pennock Brothers, at Minerva, O., are building a new shop for wood-working machinery. It is 40 by 75 ft., with a wing 24 by 30 ft., and will be fitted with new machinery driven by an engine of 45 horse-power. It will be ready for use in about five weeks.

A dispatch from St. Louis, July 18, says: "Some three weeks ago it was stated in the dispatches that a project was on foot to consolidate the interests of St. Louis and Southeast Missouri. It is now stated that this has been accomplished and that the Iron Mountain Co., with capital of $3,000,000, Pilot Knob Iron Co., capital $1,500,000; Grand Tower Manufacturing Co., $1,000,000; Vulcan Steel Works, capital $1,000,000; Chouteau, Harrison & Co., capital $600,000, and the Jupiter Co., capital $400,000, have been been brought into one combination and will hereafter be known as the Missouri Iron Co., with a capital of $10,600,000. It is stated that Chas. P. Chouteau or Edwin Harrison, of this city, both of whom are very largely interested in the Iron Mountain Company and Vulcan Steel Works, will be President of the new company. The Pilot Knob and Grand Tower Works are owned principally in New York, but the other interests are chiefly in the hands of St. Louisians. It is said this consolidation will control about 90 per cent. of the iron product of Missouri."

The Rail Market.

There is rather more inquiry for next season's delivery of steel rails, but quotations vary little, being from $55 per ton at mill for next year's orders up to $60 for immediate deliveries.

Iron rails are quiet and steady. Quotations are $46 to $47 for heavy sections up to $48 to $51 for light rails. The mills are generally full of orders.

Old rails are a little higher, but few sales are reported. Philadelphia quotations are $26.50 to $27.50 per ton.

Spikes are reported at $2.65 to $2.75 per 100 lbs.; fish-plates, $2.40 to $2.50; track-bolts, $3.25 to $3.75.

Blast Furnaces of the United States.

The quarterly statement of the *Iron Age* shows the condition of the blast furnaces of the United States on July 1, as follows:

	In blast.	Out of blast.	Not reported.	Total.
Charcoal	147	125	4	276
Anthracite	146	90	..	376
Bituminous or coke	144	77	..	221
Total	437	392	4	733
Capacity in tons per week	96,705	46,134	....	142,839

The *Iron Age* says, comparing the statements of Jan. 1, April 1 and July 1: "It will be noticed that there has been but little change in the past six months in the condition of the furnaces—less than 10 per cent. The greatest change has been in charcoal and anthracite furnaces, and the least in bituminous, there being seven less on July 1 than on Jan. 1, and eleven less than on April 1.

"Another noticeable feature of this report is the greater average capacity of bituminous furnaces shown; 146 anthracite furnaces have a capacity of 33,313 tons a week; 144 bituminous, 48,796 tons, or more than one-third greater.

"For the last five years the relative condition of the furnaces on July 1 was as follows:

FURNACES IN BLAST JULY 1.	1877.	1878.	1879.	1880.	1881.
Charcoal	87	64	81	131	147
Anthracite	87	95	101	167	146
Bituminous	85	89	95	115	144
Total	259	248	277	413	437
FURNACES OUT OF BLAST JULY 1.	1877.	1878.	1879.	1880.	1881.
Charcoal	181	202	176	136	125
Anthracite	139	130	125	68	90
Bituminous	123	128	107	109	77
Total	443	460	408	313	392

"This table shows that the anthracite furnace industry is in a worse condition than a year ago, 21 furnaces more being out of blast now than then, while of the bituminous furnaces 29 more are in. The causes of this condition would furnish an interesting article."

A Brave Engineer.

"Uncle Dave" Carey, one of the oldest engineers on the Erie road, heroically rescued a little child from a terrible death at Great Valley last Monday. As train 3 was approaching Great Valley station at a high rate of speed, the engineer, David Carey, saw a child creeping over the track toward the cars of the way freight. The latter train was standing on a siding awaiting the passage of the express. It was evident that the child had not been observed by the men on the freight, and should the train start with the little innocent under the cars it would certainly be crushed to a lifeless mass. Uncle Dave, as he is familiarly called, saw the danger of the child in an instant. Taking a second observation, he saw the little thing creep under the freight train. Instantly he put on the air-brakes and soon brought the flying express to a standstill, much to the amazement of the passengers. Without stopping to offer an explanation Uncle Dave jumped from the engine and rushed to the place where the baby was and snatched it from under the car as the freight was moving out on the track. It was a daring thing to do, but the noble engineer overlooked all danger in his effort to save the life of the child. The baby belonged to a trackman living near the station and the mother was almost overcome.—*Great Valley (N. Y.) Era.*

He Did Not Appreciate Politeness.

"I'll attend to *this* lady, thank you."

Such were the words that greeted Conductor Hough, of the Toledo, Peoria & Warsaw, as he was about to assist a lady on to his train. She had just embarked on the uncertain sea of matrimony and her new-made husband was of a jealous turn of mind.

"You needn't be so obligin'," remarked the young Benedick to the dignified ticket-taker. "This 'ere is my wife, and when she wants to get on this train or off this train I'll assist her, the which I am perfectly able to do, and don't you forget it," and with a withering look at the innocent and obliging conductor, the husband followed his bride into the coach. They occupied one seat and sat as close together as though the thermometer was down to zero.—*Keokuk (Ia.) Gate City.*

A Heavy Excursion Train.

The largest excursion party ever taken to Atlantic City was that on Saturday by the Camden & Atlantic Railroad Company. There were two locomotives and 39 first-class cars in the train; total number of excursionists, 2,340, counting 60 to a car.—*Philadelphia North American, July 18.*

Cars for Racing Stock.

The Pennsylvania Railroad is building a patent car at the Altoona shops for the transportation of fast horses and sulkies. One end of the car contains compartments for four horses, and the rest of the car is to be used for sulkies, harness, etc. The new sporting stock car is intended to be attached to passenger trains, so that grooms and stock can travel from point to point with more rapidity than by ordinary freight trains. Should this car prove satisfactory, others of the same kind will be built.

Ten Inch Gauge.

The following paragraph has been resurrected, and is going the rounds for the fourth or fifth time:

"They have an interesting little road in Massachusetts of *ten inch* gauge, running from North Billerica to Bedford, 8½ miles long. There are eleven bridges on the road, one of which is over 100 ft. long. The rails weigh 25 lbs. to the yard. The road is well built and equipped. The cars are constructed very near the ground, giving them great advantages of safety. They have an aisle with one seat on each side, in the same manner as ordinary cars have two seats, each person having a seat to himself. The cars are supplied with closets and water-tanks, are heated by steam, and have all the modern improvements. They weigh but four and a half tons, ordinary cars weighing on an average eighteen tons. The trains run at the rate of 20 miles an hour with perfect safety. The engine is placed behind the tender, giving it greater adhesion to the track. They weigh eight tons and draw two passenger and two freight cars. The cost of the railroad was $4,500 per mile."

As a matter of fact the Billerica & Bedford road was not of *ten inches* but *twenty-four inches* gauge. It is also a fact that it is not now running, was run only a few weeks, and the rails and equipment were long ago sold and carried away, and are now in use on the Sandy River road in Maine.

OLD AND NEW ROADS.

Alton & Edwardsville.—This company has been organized to build a railroad from Edwardsville, Ill., west by north to Alton, about 13 miles. The capital stock is $200,000. The proposed line is everywhere near existing roads.

Atchison, Topeka & Santa Fe.—This company's bridge over the Rio Grande at El Paso, Tex., is completed, and work is to be pushed on the line southward into Mexico, which is already located for over 100 miles south of El Paso.

Baltimore & Delta.—The Baltimore *Gazette* says: "The board of directors of the Baltimore & Delta Railroad Company have declined a proposition from Mr. Hugh J. Jewett, of the Erie Railroad of New York, and others, to take all the bonds—representing $600,000—and with them enough of the stock to secure the control of the road, for which they offered to pay $540,000, to be expended as needed in building the road. It was decided to go on with the building of the road, which, it is expected, will be completed to Towsontown during the coming spring. The present management has succeeded in disposing of $123,000 of the bonds, with a prospect of presently increasing the amount to $200,000, which sum can be expended at once on the construction. The proposition of the New York parties embraced the surrender by the company of this sum of $123,000. The directors concluded that it was better to use this money to complete the road to Towsontown and then to raise additional funds if necessary."

Baltimore & Ohio.—Work is now being pushed actively on the extension of the Wheeling, Pittsburgh & Baltimore Division eastward to the junction with the Pittsburgh Division. Arrangements are nearly completed for the new line through Wheeling.

Boston, Hoosac Tunnel & Western.—The through sleeping cars between Boston and the West by this road, the Albany & Susquehanna and the Erie are to be put on again.

Bridgeton & Saco Valley.—This company has been organized to build a railroad from Bridgeton, Me., south by west through Denmark to Hiram, on the Portland & Ogdensburg road. The distance is about 15 miles. The company has secured $50,000 in private and $40,000 in town subscriptions to the stock.

Central, of New Jersey.—The *North American* says: "The officers of the Pennsylvania Railroad yesterday morning received official notification that the form of contract for the use of the Philadelphia & Erie and Allegheny Valley roads, which the Board of Directors approved on the 8th of June and forwarded to the officials of the Wabash, St. Louis & Pacific and the Central Railroad of New Jersey, had been signed by the latter. The route of Mr. Gould's trunk line for permanent use under this arrangement includes a connection to be built between Youngstown, O., and Red Bank, the Low Grade Division of the Allegheny Valley from Red Bank to Driftwood, the Philadelphia and Erie to Milton, the Reading's Catawissa Division to Tamanend, and the Jersey Central from that point to tide-water at Jersey City. The Pennsylvania Railroad is to furnish the motive power and to receive a definite proportion of the through rates for freight, based on distance. The terms of the contract are such as to admit of the Wabash people's dispensing with the Allegheny Valley privileges if they choose, until they have got their link from Red Bank to Youngstown completed, and using the Philadelphia & Erie from Milton to Corry, where it meets the New York, Pennsylvania & Ohio, in case it makes arrangements with the latter."

Central Vermont.—The three special masters appointed by the Court of Chancery in the Langdon suit to ascertain the amount of the bonded and other debt of this company as trustee and receiver of the Vermont Central and the Vermont & Canada roads, met in St. Albans, July 11 and held a two days' session, at which a large amount of bonds were presented and certified. The masters then adjourned to Aug. 23. The three masters are J. W. Rowell, of Randolph, W. H. Walker, of Ludlow, and W. P. Dillingham, of Waterbury.

Chicago, Milwaukee & St. Paul.—Nearly 90 miles of grading is reported done on the western end of this company's new Council Bluffs line, and grading is going on at several points along the line. The question of the location of the road into Council Bluffs has not been finally settled.

Chicago, Pekin & Southwestern.—In the foreclosure suit against this company an order was entered last week in Chicago by Judge Drummond referring all unreferred claims and the receiver's last two reports to the master, and directing the latter to make a list of all claims which accrued more than six months prior to October 31, 1877, the date of the appointment of the receiver; also, a list of all such claims as accrued within a period of six months prior to such appointment. The master is to take testimony and report the amount and validity of the claims, their consideration, date of filing petitions, whether any have been presented to the receiver for payment, and which they are, and also what claims are to be found on the books of the company.

The transfer of the road to the Wabash, St. Louis & Pacific Company is noted elsewhere.

Chicago, St. Paul, Minneapolis & Omaha.—This company's Neillsville Branch has been completed and opened for traffic. It is about 15 miles long, extending from Humbird, Wis., eastward to Neillsville.

Chicago & West Michigan.—This company has been for some time at work on a branch from White Cloud, Mich., on the Big Rapids Branch, north by west to Butler Junction on the Flint & Pere Marquette, the starting point of the last-named company's branch to Manistee. The road is now graded to Nicholas Lake, 16 miles from White Cloud, and track is laid 10 miles to State Road.

Cincinnati, Georgetown & Portsmouth.—The track on the extension of this road eastward has been laid to Bethel, O., six miles beyond the late terminus at Cleveland's, and 28 miles from the junction with the Pittsburgh, Cincinnati & St. Louis at Columbia.

Cincinnati & Ohio River.—This company has completed its organization, and proposes building a railroad from Cincinnati along the north side of the Ohio River to a point opposite Huntington, W. Va. The line has been surveyed already by four or five companies.

Cleveland, Columbus, Cincinnati & Indianapolis.—The following statement is published for the half year ending June 30:

Gross earnings		$2,100,000
Expenses	$1,430,000	
Interest	226,900	
Taxes	63,000	
		1,719,600
Surplus		$380,400

This is equal to somewhat more than 2½ per cent. on the capital stock, but under an agreement between this and the Cincinnati, Hamilton & Dayton companies, pending the action of the stockholders upon the proposed consolidation (to be voted on Sept. 1), no dividend will be declared upon the shares of either company.

As compared with first half of 1880, there was an increase of 8 per cent. in gross and of 17 per cent. in net earnings.

Columbus, Hocking Valley & Toledo.—The new owners of the Columbus & Hocking Valley, the Columbus & Toledo and the Ohio & West Virginia roads have agreed to consolidate the three companies as the Columbus, Hocking Valley & Toledo. The question will be formally submitted to the stockholders at meetings called for Aug. 2.

Denver & Rio Grande.—This company has issued the following notice:

"Holders of second-class tickets will be carried on regular passenger trains; but, as the issue of such tickets to Colorado points is unauthorized, this line will demand full first-class proportions on all second-class tickets so honored. Emigrants for Colorado Springs, Peublo or Denver will be carried only on emigrant trains. Emigrants for points west or south of Pueblo will be transported in smoking-cars."

Eastern Shore.—The usual yearly project for the extension of this road from Crisfield, Md., down the peninsula to Cherrystone, Va., is under discussion, and a survey of the line is to be made.

East Tennessee, Virginia & Georgia.—This company has organized its own and controlled lines into the following divisions:

1. Main Stem, the original line from Bristol, Tenn., to Chattanooga.
2. North Carolina Division, the former Cincinnati, Cumberland Gap & Charleston road, from Morristown, Tenn., to the North Carolina line.
3. Ohio Division, the former Knoxville & Ohio road, from Knoxville to Careyville, with an extension to the Kentucky line in progress.
4. Selma Division, the late Dalton Branch and Selma, Rome & Dalton road, from Cleveland, Tenn., to Selma, Ala.
5. Alabama Central Division, the late Alabama Central road, from Selma, Ala., to Meridian, Miss.
6. Macon & Brunswick Division, from Macon, Ga., to Brunswick. An extension in progress from Macon to Atlanta.

Fairplay, Mt. Sheridan & Leadville.—This company has been organized to shorten the circuitous line through the mountains from Denver, Colo., to Leadville, by a short line from Fairplay to Leadville, cutting through the Mosquito Range at Horse Shoe Pass by a long tunnel.

Genesee Valley.—The Martin party, who claim to have bought a majority of the stock of this road, held a meeting in New York, July 12, and elected directors. The Rochester party, who refuse to recognize the Martin stock, also met and elected directors, in spite of an injunction, which they refused to recognize, on the ground that it had been granted without notice. A proposition for a compromise is said to have been made.

George's Creek and Cumberland.—The crossing of this road over the Baltimore & Ohio in Cumberland, Md., has not been built in consequence of the opposition of the Baltimore & Ohio, in spite of favorable decisions in the courts and by the Board of Public Works of the state. Finally the George's Creek and Cumberland Company resolved to put the crossing in by force, if necessary, and made arrangements to have a large number of miners on hand July 18 for that purpose. At the last moment, however, the Baltimore & Ohio gave way and had the crossing put in by its own men. The trains of the George's Creek & Cumberland road can now run through and deliver coal to the Chesapeake & Ohio Canal.

Illinois Central.—This company's Kankakee & Southwestern proprietary line gives notice that the shareholders have held a meeting and resolved to retire $200,000 worth of bonds made to L. V. F. Randolph and Stuyvesant Fish, trustees, and to execute a deed of trust of its corporate property for the purpose of finishing, improving and equipping the road. The trust deed will secure the payment of $1,000,000 of registered bonds to be issued by the Illinois Central Railroad Company and made payable at the company's office in New York in 1921. The bonds will bear 5 per cent. interest, and interest will be payable semi-annually.

Indianapolis & Toledo.—This company has filed articles of incorporation to build a railroad from Indianapolis, Ind., east by north to the Ohio state line in Randolph County, about 80 miles.

Jacksonville & Kansas City.—This company has filed articles of incorporation for a railroad from Springfield, Ill., by Jacksonville and Winchester, to Quincy, about 95 miles. The line is nearly parallel to the Wabash.

Kansas City, Fort Scott & Gulf.—This company is making surveys for an extension from Springfield, Mo., through Missouri and Arkansas to the Mississippi opposite or near Memphis.

Kansas City & Olathe.—This company has been organized to build a road about 12 miles long, which will extend the Kansas City, Lawrence & Southern Kansas road from Olathe, Kan., north to a connection with the Atchison, Topeka & Santa Fe's Kansas City Branch. It will enable the Kansas City, Lawrence & Southern Kansas trains to reach Kansas City without using the Kansas City, Ft. Scott & Gulf tracks.

Kentucky Central.—The change of gauge of this road on July 11 proved to be a big day's work, owing to the fierce heat. It had been arranged, says a Cincinnati paper, to work 500 men on the main stem and Maysville Branch, giving an average of 3½ men to the mile, who were to operate in groups of 15. One hundred of these men were borrowed from the Southern Railroad and 100 from the Louisville Short Line. Only 350, however, reported for duty, owing to the heat. Toward midday the men began to drop from the heat, and it was thought best for all hands to quit work and resume by moonlight. Fully one-half of the force were overcome by the sun. In preparation for the change, the inner spikes for the new position of the rail—but one rail being moved—had been driven in advance. When the final work begun, it was only necessary to jerk out the inner spikes of the old position of the rail—already partly loosened—and move the entire rail in great waves, as it were, to its new place. The work on the main stem, 100 miles, and 20 miles of siding, was finished by midnight. The work on the Maysville Branch, 50 miles, was finished by 4 o'clock p. m. The gauge was made 4 ft. 9 in., which is the Pennsylvania standard.

La Salle & Mississippi.—This company has filed articles of incorporation in Illinois. The capital stock is $2,000,000. It is proposed to construct a line of road from La Salle to the Mississippi River in Whiteside County, with the right to bridge the Mississippi River and to construct a branch from the main line in Bureau County to Rockford.

Lehigh Valley.—A report has been in circulation this week in Philadelphia that this road was to be leased to the Pennsylvania Railroad Company. It has, however, been denied by officers of both companies. The two companies are on very friendly terms.

Little Falls & Dakota.—Arrangements have been completed to build this road from Little Falls, Minn., westward as a branch of the Northern Pacific and under the control of that company.

Live Oak & Rowland's Bluff.—This company has been organized to build a railroad from Live Oak, Fla., the terminus of the Savannah, Florida & Western's old Florida Division, southward to Rowland's Bluff on the Suwannee River.

Manhattan Elevated.—The Attorney General's second application for a receiver has been successful. The Court granted the application, appointing John F. Dillon and A. L. Hopkins, who took formal possession at once.

Mayville Extension.—This road is now completed from Mayville, N. Y., to Fair Point on Chautauqua Lake on the grounds of the Chautauqua Lake Assembly. It is three miles long, and will be worked as a branch of the Buffalo, Pittsburgh & Western road, with which it connects at Mayville. It was to be opened for business July 20.

Minneapolis & St. Louis.—The branch of this road from Hopkins, Minn., northwest to Excelsior on Lake Minnetonka, is completed and was opened for business last week. It is about 10 miles long, and is intended to secure a share of the large travel to Lake Minnetonka, a noted summer resort.

Missouri, Kansas & Texas.—The track on the Southwestern Extension has now reached a point 25 miles south of Ft. Worth, Tex., and is progressing steadily.

Missouri Pacific in Nebraska.—It is reported that a contract has been let for the grading of this road to Hammond & Beeson, of Atchison, Kan. The line is from Atchison up the west bank of the Missouri to Omaha, about 130 miles.

Monongahela & Youghiogheny.—This company has been organized to build a railroad about five miles long running through McKeesport, Pa., and into Lincoln and Patterson townships. It is, apparently, a coal road.

Mooselauke.—It is proposed to build a railroad, on the same plan as the Mt. Washington road, from Warren, N. H., on the Boston, Concord & Montreal, to the summit of Mt. Mooselauke, a distance of about 10 miles.

Morgan's Louisiana & Texas.—Track on the North Branch is now laid to Garland, La., 16 miles north of the old terminus at Washington, and 44 miles from the main line at Vermillionville. Regular trains will run very soon.

Natchez, Red River & Texas.—A survey is being made of this line from Vidalia, La., on the Mississippi opposite Natchez, to Alexandria, and is to be carried through to Buras Ferry on the Sabine. The right of way to Alexandria and some subscriptions in land and money have been secured.

New Bonds.—New issue of bonds have been placed or are offered as follows:

The *New York & New England* first-mortgage 6 per cent. bonds offered last week ($500,000 in amount) have been awarded to C. H. Venner & Co. and Brewster, Bassett & Co., of Boston, at 112.89. The bonds have 24 years to run.

Chicago, St. Louis & New Orleans 5 per cent. bonds, having 70 years to run, are offered by Winslow, Lanier & Co., of New York. These bonds are secured by a general mortgage on the road, and a sufficient amount is reserved to provide for all prior liens. The Illinois Central Company owns two-thirds of the stock of the company.

New York Central & Hudson River.—Mr. N. H. Decker, contractor for the two additional tracks between Rochester and Buffalo, has now a large force at work and has lately made considerable advance with the work. About 32 miles of the additional tracks have been laid at various points.

Norfolk & Western.—This company has contracted for 8,000 tons of steel rails to be used in renewals of the road.

A contract has been let to Mills & Rowland for grading the New River Branch from New River station to the West Virginia line, a distance of 30 miles.

Northern, of Canada.—The gauge of this road from Toronto, Ont., to Gravenhurst, 115 miles, was changed to 4 ft. 8½ in. last week. This was one of the few sections of 5 ft. 6 in. gauge remaining in Canada.

Northern Pacific.—Regular trains begin this week to run through to Glendive, Montana, on the Yellowstone River, which is 28 miles beyond the end of the track at the close of last year, 669 miles from Duluth, and 690 miles from St. Paul. Work is progressing in the Yellowstone Valley beyond Glendive.

Work is also progressing on the Pend d'Oreille Division, and the grading of much of the division is now well advanced.

Northern Pacific & Black Hills.—This company has executed a mortgage to secure an issue of bonds at the rate of $15,000 per mile on its road, now under construction. The bonds are to bear 4 per cent. interest for six years, and 6 per cent. afterward.

Osceola & Des Moines.—A dispatch from Burlington, Ia., July 17, says: "The Osceola & Des Moines Railway Company was organized in this city July 12, to build a road from Osceola north to Des Moines, 40 miles. The incorporators are H. B. Scott, W. W. Baldwin, J. W. Blythe, T. S. Hawland, H. C. Sigler, T. J. Potter and T. B. Stuart. The road will be built in the interest of the Chicago, Burlington & Quincy Railroad Company. Surveying parties were put in the field yesterday, and the road will be built as rapidly as possible."

Oxford & Henderson.—Tracklaying is in progress on this road and about five miles are down. The road is to run from the Raleigh & Gaston at Henderson, N. C., west to Oxford, 12 miles.

Palestine.—This company has been incorporated under the general law of Massachusetts to build a railroad from Cairo in Egypt through Palestine into Syria.

Pen Argyl & Catasauqua.—It is proposed to build a railroad from the great slate quarries of Pen Argyl in Northampton, Pa., southwest to Catasauqua, about 25 miles. Mr. John I. Blair is said to be interested in the project.

Philadelphia & Reading.—The cash report of the Receivers for June, as audited by the Master is as follows:

	Railroad Co.	Coal & Iron Co.
Cash, June 1	$248,433.23	$84,211.25
Receipts in June	2,550,901.96	1,185,092.13
Total	$2,799,335.29	$1,269,303.38
Disbursements in June	2,358,266.66	1,285,092.03
Balance, July 1	$440,268.63	

The receipts for Coal & Iron Company business were less than the payments.

Philadelphia reports are that the delayed annual report will be issued soon; also that the new board is preparing a plan to get the company out of its troubles.

Philadelphia & Long Branch.—The long bridge over Barnegat Bay at Sheepshead Point is completed and rails

laid across, extending the terminus of the road to the east shore of the bay. It is a pile bridge 1¾ miles long, with a draw-span 240 ft. long. The road is now 17 miles long, from Pemberton Junction eastward. It is worked for the Pennsylvania Railroad Company.

Quebec, Montmorenci & Charlevoix.—This company has been organized to build a railroad from Quebec (Canada) northeast down the north bank of the St. Lawrence about 80 miles, crossing the counties of Montmorenci and Charlevoix.

Quincy, Vandalia & Eastern.—This company has filed articles of incorporation to build a railroad from Quincy, Ill., southeast to Jerseyville and then east by south to Vandalia. The office is at Jerseyville, Jersey County, Ill. The capital stock is $5,000,000, and the proposed road is about 145 miles long.

St Louis, Des Moines & Northern.—This company has contracted to buy the narrow-gauge equipment and light rails of the Indianapolis, Delphi & Chicago road, now being changed from 3 ft. to standard gauge.

St. Louis, Iron Mountain & Southern.—Work is to be begun at once on this company's projected system of branches in Arkansas. Contracts have been let for 40 miles of the first branch extending from the main line at Noble, Ark., southeast. This section of 40 miles is to be finished this season.

St Louis & San Francisco.—This company has completed and opened for business its Galena Branch, which extends from Joplin, Mo., westward to Galena, Kan., eight miles. It has been built to serve local mining interests.

Savannah, Skidaway & Seaboard.—Some of the bondholders have begun proceedings in foreclosure against this road, having refused an offer of the company to pay interest provided they would accept 5 instead of 7 per cent. The road is a suburban line from Savannah to Montgomery, 11 miles; the bonded debt is $100,000.

Securities on the New York Stock Exchange.—The following have been admitted to dealings on the New York Stock Exchange:

East Tennessee, Virginia & Georgia.—Stock, $27,500,000; preferred stock, $16,500,000; income bonds, $16,500,000; general first-mortgage bonds, $22,000,000.

Morgan's Louisiana & Texas.—First-mortgage bonds, $1,272,000 outstanding, $1,800,000 authorized.

Chicago, St. Louis & New Orleans.—Seventy-year 5 per cent. bonds, $1,800,000 authorized.

Richmond & Allegheny.—Additional stock trust certificates, $723,300, making $5,000,000 in all.

Texas Central.—First-mortgage bonds, $2,145,000.

Scioto Valley.—Stock, $25,000; first-mortgage bonds, $2,100,000.

Sharpsville, Newcastle & Rochester.—This company has been incorporated to build a railroad from Sharpsville, Pa., southward to Rochester, about 40 miles.

Southern Pacific.—The Boston *Transcript* says: "Mr. C. P. Huntington, of the Central and Southern Pacific roads, recently remarked, while in Boston, that on his journey east he had purchased three Texas roads. One of these was then understood to be the Galveston, Harrisburg & San Antonio, a Boston road, built about 300 miles from Harrisburg west through San Antonio, and pushing on to El Paso The price has not yet developed. It is now learned that the two other roads were the Texas and New Orleans of 1874, the connection of the Galveston, Harrisburg & San Antonio from Houston, 108 miles east, to Orange, on the Sabine River (the Louisiana border); and the Louisiana Western road, the 106 miles connection between Orange and the Morgan line to New Orleans. When the Southern Pacific shall have joined the Galveston road in Texas, which will be by next July, 1882, Mr. Huntington will have a through independent line from San Francisco to Vermilionville, La., whence the Morgan line runs to New Orleans, 143 miles distant. The price paid for the $3,000,000 capital stock of the Texas & New Orleans of 1874 was $85 per share, and to this sale the Oakes Ames estate contributed 5,000 shares. With this price for the stock, the road costs Mr. Huntington, with its debt, about $50,000 per mile. The cost of this stock ten years ago was $42 per share, and it has been for many a year a burden to its owners."

It is reported that Mr. Huntington has also made the Morgan Company two offers, one for the line from Vermilionville to New Orleans, the other for all its Texas property, including the control of the Houston & Texas Central. But the company is reported as unwilling to negotiate.

Springfield & Siuslaw.—This company has been organized to build a railroad from a point on the Willamette River, opposite Springfield, Oregon, to tide-water on the Siuslaw River, in Lane County. The distance is 80 miles and the capital stock $500,000. The office is in Eugene City, Oregon. The incorporators are John Kelly, J. H. McClung and A. S. Patterson.

State Line.—This company has filed articles of incorporation for a railroad from a point on the Mississippi opposite Burlington, Ia., eastward across Illinois to the Indiana line. The proposed line is parallel to the Wabash's Peoria & Iowa Division.

Staten Island North & South Shore.—This company has been organized to build a railroad along the west shore of Staten Island (N. Y.) from Elm Park to South Bay, about eight miles.

Tennessee Coal & Railroad Co.—A dispatch from Nashville, Tenn., July 17, says: "One of the most important sales of southern property made in years was concluded here last evening. The property of the Tennessee Coal & Railroad Company, and Sewanee Furnace Company, covering a large body of land, including 15,000 acres of coal, and also 500 coke ovens, a blast furnace making 100 tons of iron daily, and a standard-gauge railroad of 21 miles, with 7 miles of branches, the cost of the improvements alone approximating $2,000,000, was bought by a party of New York and Nashville capitalists. The price paid is not named. Mr. Nathaniel Baxter, Jr., President of the First National Bank of Nashville, has accepted the presidency of the company. Among the directors will be John H. Inman, of Inman, Swan & Co., New York; C. C. Baldwin, President of the Louisville & Nashville Railroad; ex-Governor J. D. Porter, President of the Nashville, Cincinnati & St. Louis; E. W. Cole, President of the East Tennessee, Virginia & Georgia; E. M. McGhee, Vice-President of the same company; Thomas O'Connor, of the firm of Cheerey, O'Connor & Co.; Colonel A. S. Colyer, of Nashville; B. R. Smith, of New York, and James C. Warner, of the Rising Fawn Furnace Company. The new company will take possession immediately."

Tennessee & Sequatchie Valley.—Work is now in progress on this road, which is to run from the Tennessee River at the mouth of Piney to Spring City, on the Cincinnati Southern, and thence west to Pikeville, in the Sequatchie Valley, 42 miles in all. It will reach valuable deposits of coal and iron ore, and will penetrate a district covered with fine hard-wood timber. It is intended to finish 13 miles of the road this season, which will connect the large lumber mills of E. D. Albro & Co. and the mines of the Walden's Ridge Coal & Iron Company with the Cincinnati & Southern.

Texas & Pacific.—The end of the track on the Rio Grande Division was, at latest advices, at a point 373 miles west of Dallas, Tex., and 593 miles from Texarkana. The grading parties are now at work well out on the Staked Plains.

Texas & St. Louis.—The contract for the grading of this road from Bird's Point, Mo., to Little River, a distance of 39 miles, has been let, and grading is now going on. From Malden, Mo., to Oak Bluff, Clay County, Ark., 25 miles, the work is all under contract, and 20 miles of the New Madrid & Malden track (owned by the Texas & St. Louis) will be used as a part of the link. On the Southern Division 25 miles have been put under contract from Texarkana to the Red River.

Toledo, Cincinnati & St. Louis.—A large force is now reported at work on this road in Indiana and Illinois.

The Frankfort and Kokomo road, which has been bought by this company, was to be changed this week from standard to 3 ft. gauge.

Toledo & Indianapolis.—This company has been organized to build a railroad from Toledo, O., southeast to the Indiana line, whence it will be continued to Indianapolis by the Indianapolis & Toledo Company, just organized in Indiana.

Train Robbery.—As an express train on the Chicago, Rock Island & Pacific road stopped at Winston, Mo., on the evening of July 16, a number of men, who had got in the smoking car at Cameron, suddenly rose and, drawing revolvers, compelled the other passengers to keep still, while some of the gang entered the express car and carried off the money and valuables from the safe. At their first outbreak in the smoking car they shot and killed the conductor and a passenger who made a motion to rise in the seat. They also tried to shoot the engineer, but he escaped. After robbing the safe they took to the woods and had not been captured at latest accounts. They are supposed to have taken about $15,000 from the safe.

Turtle Creek & Allegheny.—This company has been organized to build a railroad from the Pennsylvania Railroad at Turtle Creek, Pa., to the Allegheny Valley road near the junction of the Pium Creek Branch. The distance is about 10 miles. It will be a cross-cut between the Pennsylvania and the Allegheny Valley roads, passing just outside Pittsburgh.

Utah and Wyoming.—The Salt Lake (Utah) *Herald* says: "On Friday last the articles of incorporation of the Utah & Wyoming Railroad were filed in the office of the Territorial auditor. The articles provided for the building of a railroad from a point somewhere in Box Elder County, through Cache County, Rich County into Wyoming to Granger. The incorporators, besides four Salt Lake gentlemen—F. Auerbach, W. S. McCornick, Esq., P. E. Connor, and Colonel S. Kahn—consist of two Boston and three New York men, and J. D. Negus, the engineer of the line. It is incorporated for $4,200,000, and will be standard gauge. This is the line which parallels the Union Pacific for a considerable distance along its Granger and Pocatella route, and which, it was rumored, had the conflicts with the Union Pacific. It is certain that both lines hold a number of the most difficult passes in common, and that there will be trouble between the companies as to possession. The general impression has been that the Central Pacific was pushing the Utah & Wyoming road; but it is now stated, on what is believed to be good authority, that the Chicago, Burlington & Quincey road is furnishing the means to forward work on this new enterprise."

Valley, of Virginia.—In accordance with the agreement lately made by the Baltimore & Ohio Company to put $1,000,000 more in this road, work is to be resumed Aug. 1, with the intention of completing the extension from Staunton to Lexington by next spring.

Vernon, Greensburg & Rushville.—It is understood that this road, from Greensburg, Ind., to North Vernon, 26 miles, has been leased for five years to the Cincinnati, Indianapolis, St. Louis & Chicago Company, of whose road it is a branch.

Vidalia & Sabine.—A company is to be organized to build a narrow-gauge road from Vidalia, La., on the Mississippi, opposite Natchez, across Louisiana to Burns' Ferry on the Sabine. It is intended to connect with the Houston, East & West Texas road.

Wabash, St. Louis & Pacific.—The following circular to general ticket agents has been issued by General Ticket Agent Daniels, dated July 13:

"This company assumes control of the Peoria, Pekin & Jacksonville, and Springfield & Northwestern railways, July 15 next, and they will, from that date, be operated as part of our system. All tickets which read *via* either of the above named lines should be changed to read 'via Wabash, St. Louis & Pacific Railway,' whenever a re-print is made, and proportions accruing on through business should be reported to this company. The important points on those lines are: Peoria, Ill., Pekin, Ill., Havana, Ill., Virginia, Ill., Jacksonville, Ill., Springfield, Ill., and Petersburg, Ill., and if you have not already placed on sale tickets to those points, I shall be glad if you will do so as soon as possible.

"Only one coupon is necessary between any two points on our system east of the Mississippi River, including St. Louis, Mo., Hannibal, Mo., Keokuk, Ia., Burlington, Ia., and points on the lines mentioned above."

Waynesburg & Washington.—A controlling interest in this road has been bought by the Pennsylvania Company, and the road will soon be transferred to that company. The road is a narrow-gauge line, from Washington, Pa., south to Waynesburg, 28 miles, and has had its outlet over the Pittsburgh Southern. It is understood that the road will be changed to standard gauge and worked as an extension of the Chartiers road.

ANNUAL REPORTS.

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The following brief statement of earnings and expenses for the fiscal year ending June 30 is made, in advance of the publication of the full report.

The earnings for the year were as follows:

	1880–81.	1879–80.	Inc. or Dec.	P. c.
Gross earnings	$2,103,968	$2,099,155	I. $4,813	0.2
Expenses	1,265,821	1,184,748	I. 81,073	7.0
Net earnings	$838,147	$914,407	D. $76,260	8.4
Gross earn. per mile	4,574	4,629	D. 55	1.2
Net " "	1,822	2,016	D. 194	9 6
Per cent. of exps	60.16	56.50	I. 3.66	...

The gross earnings were very nearly the same in both years; the net earnings show a considerable decrease, due chiefly to large renewals.

The income statement is as follows:

Net earnings		$838,146.64
Interest and taxes	$475,716.00	
Improvement account, N. W. Div	195,797.50	
New iron bridges	26,144.85	
New engines	27,006.10	
New cars	159,005.00	
Real estate	25,021.62	
		909,321.27
Excess of expenditures		$71,174.63

This statement shows the sum of $433,605 27 paid out for permanent improvements and additions to property. The surplus over interest and taxes, not including improvements, was $362,430.64 for the year.

Paducah & Elizabethtown.

This company owns a line from Elizabethtown, Ky., to Paducah, 185 miles. It is successor through foreclosure to the Louisville, Paducah & Southwestern. The report is for the year ending Jan. 1.

The earnings were as follows:

	1880–81.	1879–80.	Increase.	P. c.
Freight	$82 9.048	$258,704	$ 0,344	11.7
Passengers	92 775	71,071	21,704	30.6
Mail, etc	28,491	22,695	5,756	25.2
Total	$410,314	$352,470	$57,844	16.4
Expenses	3 2,168	269,237	42,931	16.0
Net earnings	$98,146	83 233	14,913	17.9
Gross earns. per mile	2,218	1,905	313	16.4
Net " "	531	450	81	17.9
Per cent. of expenses	76.08	76.37	...	....

The increase both in gross and net earnings is notable; but the earnings are still light.

The income account is as follows:

Balance from third fiscal year		$'23
Net earnings, fourth fiscal year		98,146
Total		$98,269
Right of way claims, etc	$12,164	
Interest and sinking fund, first-mortgage	28,999	
		41,163
Balance for income bonds		$57,106

Out of the balance as above stated, the directors have declared and paid a dividend upon the income bonds of the company at the rate of $50 per $1,000 bond, and have carried forward a balance of $45 95.

The President says in the report: "The past history of the company has not been especially prosperous, the progress of the property having been retarded by its local isolation. Arrangements are now on foot to combine the road with others, so as to make it part of a through line. To this end the cordial co-operation of all the proprietors is invited, and the directors recommend prompt assent to this proposal, which will be at once submitted, believing that acceptance of the plan for reorganization will be largely to the benefit of the holders of this company's securities."

Baltimore & Hanover.

This road extends from Black Rock, Md., to Emory Grove, 20 miles. It is worked by the Hanover Junction, Hanover & Gettysburg Company, but makes the following separate report for the year ending March 31.

The earnings for the year were as follows:

Gross earnings ($2 091.95 per mile)	$41 838 94
Expenses (57.5 per cent.)	24,163.78
Net earnings ($883.76 per mile)	$17,675.16

These net earnings were equivalent to 6 per cent. on the $120,000 of mortgage bonds, and nearly 13 per cent. on the $88,000 of the capital stock. The net earnings with the receipts from other sources have been disbursed in the payment of interest on the bonds, to payment of floating debt, to building dwelling-house at Emory Grove, and water station at Miller's, to ballasting track with broken stone, to filling in trestling with earth, and for other betterments which have improved the roadway, and consequently increased the construction accounts.